

2/2 030

CIRC ACCESSION NO--AN0138120

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE SUMMARIZES THE RESULTS
OF THE SOVIET AND U.S. LUNAR RESEARCH EFFORTS. FACILITY:
COMMISSION OF PLANETARY PHYSICS OF THE ASTRONOMICAL COUNCIL.
FACILITY: ACADEMY OF SCIENCES, U.S.S.R.

UNCLASSIFIED

USSR

UDC 581.167

SHEVCHENKO, V. A., PYATYSHEV, D. R., VAULINA, E. N., and ANIKYEVA, I. D.

"Application of the Sector Mutant Colonies Test in the Study of the Mutation Process in Chlorella"

Moscow, Byulleten' Moskovskogo Obshchestva Ispytateley Prirody, Novaya Seriya, Otdel Biologicheskii, Vol 75, No 3, May/June 70, pp 133-145

Abstract: The mutation process of *Chlorella vulgaris* (strain LARG-1) was studied by the method of sector mutant colonies. A synchronous culture of the algae in the pre-synthetic stage (young autospores) was exposed to the short-lived action of ethylenimine. Mixed mutant clones giving rise to sector colonies predominated over pure mutant clones. Study of the sector mutant colonies indicated an ordered spatial distribution of the daughter nuclei within the mother cells. This distribution was preserved in the solid nutrient medium after passage of the autospores from the mother cell. Ethylenimine induced mass formation of sectors of the aberrant types 3/8 and 5/8 and others that were present to only a minor extent after the action of X-rays or UV light on *Chlorella*. Formation of the aberrant types cannot be explained satisfactorily at this stage. The data obtained on the types of sectors and their quantitative distribution supported the hypothesis of the cyclic polytene nature of chromosomes in *Chlorella*.

1/1

USSR

UDC 575.24

SHEVCHENKO, V. A., Institute of General Genetics, Academy of Sciences USSR,
Moscow

"Genetic Adaptation of Chlorella Populations to the Chronic Effect of Ionizing
Radiation"

Moscow, Genetika, Vol 6, No 8, Aug 70, pp 64-73

Abstract: Chlorella vulgaris strains were isolated from soil which had been made radioactive by the introduction of Sr⁹⁰ + Y⁹⁰ and in which the algae had been allowed to develop under natural conditions for 5-6 yrs. The radioactivity of the soil varied from 1×10^6 to 1×10^{10} decays/min/kg. After isolation, the strains were subjected to irradiation with x-rays in a dose of 30 kR. The viability of Chlorella populations as indicated by the capacity to propagate under laboratory conditions was then determined. The LD₅₀ of the strains for x-ray irradiation was increased on the average by a factor of 1.5-2.0 as a result of exposure to Sr⁹⁰ + Y⁹⁰. The optimum concentrations of radioisotopes in the soil for increasing the resistance to x-ray irradiation corresponded to 1×10^7 to 1×10^8 and 1×10^6 to 1×10^7 decays/min/kg for 5 and 6 yrs of exposure, respectively. A maximum percent viability developed at these concentrations. Strains with increased resistance to radiation also had a higher resistance to temperatures above 37°C and higher productivity as compared to the controls.

1/1

172 018

TITLE--RAPID CURRENT PREAMPLIFIER FOR USE IN AN ELECTRON COLLIMATING SYSTEM FOR NEUTRONS -U-
UNCLASSIFIED
PROCESSING DATE--16OCT70

AUTHOR--(03)--ANDREYEV, E.A., SITKO, S.P., SHEVCHENKO, V.A.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, 1, 132-3

DATE PUBLISHED-----70

S

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--NEUTRON BEAM, COLLIMATUR, PREAMPLIFIER, HELIUM ISOTOPE,
SEMICONDUCTOR DETECTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1226

STEP NO--UR/0120/7G/001/000/0132/0133

CIRC ACCESSION NO--AP0115243

UNCLASSIFIED

2/2 018

CIRC ACCESSION NO--AP0115243
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--16OCT/0

ABSTRACT. A FAST ACTING CURRENT PREAMPLIFIER IS DESCRIBED FOR A SURFACE BARRIER TRANSISTORIZED DETECTOR. THE PREAMPLIFIER IS ASSEMBLED FROM HIGH FREQUENCY TRANSISTORS AND IS DESIGNED TO PROVIDE A FINE CORRELATION (ACCORDING TO CO TRAVELLING PRIME3 HE PARTICLES) IN A SYSTEM OF ELECTRONIC COLLIMATION OF N FROM THE D D REACTION WITH A RESOLN. TIME OF SEVERAL NSEC. THE AMPLIFICATION COEFF. EQUALS SIMILAR TO 599, THE TIME OF PULSE INCREASE AT THE OUTLET IS LESS THAN 15 NSEC. THE CURRENT AMPLIFICATION RESULTS IN AN 8 FOLD INCREASE OF SIGNALS FROM PRIME3 HE PARTICLES OVER BACKGROUND NOISE.
FACILITY: KIEV. GOS. UNIV. KIEV. USSR.

UNCLASSIFIED

USSR

UDC 575.1:591.526+576.8.095.14

DUBININ, N. P., SHEVCHENKO, V. A., ALEKSEYENOK, A. Ya., CHEREZHANOVA, L. V.,
and TISHCHENKO, Ye. M.

"Genetic Processes in Populations Exposed to Ionizing Radiation"

Moscow, Uspekhi Sovremennoy Genetiki, No 4, 1972, pp 170-205

Abstract: The article is a review of experimental and theoretical studies concerned with the effects of radiation on populations and biocenoses. It summarizes and systematizes the published data and the authors' long-term observations on the genetic processes that take place in populations chronically and protractedly exposed to radiation. It also examines and discusses the processes at work in populations of unicellular organisms (microalgae), higher plants, and mammals. The genetic adaptation of populations to chronic, protracted radiation is discussed, 13 tables, 13 illustrations, bibliography of 7 references.

1/1

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

1. Brief Historical Outline	5
2. Branches of Industry in Production of Nuclear Energy	10
3. Subject and Content of the Course of the Chemical Technology of Bombarded Nuclear Fuel	10
Bibliography	12
Chapter 2. Chemical and Physical-chemical Properties of the Actinides	12
4. Position of the Actinides in the Periodic Table	12
5. Some Chemical Properties of the Actinides and Their Status in Aqueous Solutions	16
5.1. Valent States	16
5.2. Oxidation-reduction Properties and Potentials	19
5.3. Comparison of Rates and Mechanisms of Oxidation-Reduction Reactions of U, Np, and Pu	28
5.4. Hydrolysis	30
5.5. Complex Formation	32
Bibliography	38
Chapter 3. Characteristics of Nuclear Fuel	38
6. Principles of Production of Nuclear Power	38
7. Nuclear Reactors	40
7.1. Commercial Reactors for the Production of Plutonium	40

2/9

- 29 -

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

20. Critical Masses of Fissionable Materials	98
21. Storage and Transportation of Bombarded Fuel Elements	103
22. General Characteristics of Methods of Processing Bombarded Fuel	105
Bibliography	107
Part II. Aqueous Methods of Processing Bombarded Materials	
Chapter 5. Dissolution of Bombarded Nuclear Fuel	108
23. Mechanical Methods of Processing of Fuel Elements	108
24. Chemical Methods of Removal of Envelopes	112
25. Dissolution of Nuclear Fuel	117
26. Removal of Gaseous Products During Dissolution of Fuel Elements	125
27. Apparatus Used in Processes of Dissolution of Fuel Elements	127
28. Preparation of Active Solutions for Subsequent Processes	131
Bibliography	133
Chapter 6. Precipitation Technology for Processing of Active Solutions	153
29. Introduction	153
30. Coprecipitation	134
31. Bismuth-Phosphate Process of Separation of Plutonium	138
32. Lanthanum Sulfate Process	140
33. Other Technological Processes Used in Processing of Active Solutions with Precipitation	141

4/9

- 30 -

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

Bibliography	142
Chapter 7. Extraction Technology for Processing of Active Solutions	142
34. Introduction	142
35. Selection of Extracting Agent and Diluting Agent for Processing of Solutions of Bombarded Nuclear Fuel	145
36. Use of TBP (tributylphosphate) for Processing of Bombarded Nuclear	
37. Physical and Chemical Principles of Extraction of Uranium and Plutonium with TBP	154
38. Behavior of Fission Products During TBP Extraction	164
39. Separation of Uranium and Plutonium by TBP Extraction	169
40. Use of TBP for Processing of Fuel Elements Based on Highly Enriched Uranium	180
41. Use of TBP for Separation of Thorium and Uranium-233	184
42. Use of Other Types of Organic Compounds for Processing of Bombarded Nuclear Fuel	190
43. Apparatus Used in Extraction Processes with Solutions of Bombarded Fuel	201
Bibliography	212
Chapter 8. Sorption Methods of Processing Active Solutions	213
44. Basic Regularities of Sorption of Actinides on Cationites and Anionites	213

5/9

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

45. Effects of Radiation on Ion Exchange Resins	220
46. Use of Ion Exchange for Processing of Active Solutions	223
47. Use of Inorganic Sorbents for Processing of Active Solutions	225
Bibliography	227
Part III. Refining and Metallurgy of Secondary Nuclear Fuel	
Chapter 9. Refining of Plutonium	228
48. Extraction Refining	228
49. Sorption Refining	242
50. Precipitation Refining	248
51. Production of Plutonium Dioxides	253
Bibliography	258
Chapter 10. The Metallurgy of Plutonium	259
52. Physical and Chemical Properties of Metallic Plutonium	259
53. General Characteristics of Methods of Production of Plutonium	262
54. Metallothermic Reduction of Plutonium Fluorides	269
55. Metallothermic Reduction of PuCl_3	280
56. Processing of Plutonium-containing Wastes	285
Bibliography	290

6/9

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryu-
chego, Moscow, Atomizdat Press, 1971, 448 pages.

Chapter 11. Regeneration of Uranium and Thorium. Refining of Uranium-233	290
57. Regeneration of Uranium	290
58. Regeneration of Thorium	297
59. Refining of Uranium-233	302
Bibliography	303
Part IV. Nonaqueous Methods of Processing Bombarded Materials	304
Chapter 12. Processing of Fuel Elements by Sublimation of Halides	307
60. Characteristics of Basic Properties of Fluorides of Uranium, Plutonium, Envelope Materials, and Fission Products	307
61. Use of Halogen Fluorides for Fluorination and Dissolution of Bombarded Fuel Elements	309
62. Fluorination in Salt Melts	313
63. Fluorination of Fuel Elements with Elementary Fluorine	324
64. Use of Chlorination for Processing of Fuel Elements	330
65. Separation of Uranium Hexafluoride and Plutonium Hexafluoride	335
66. Separation of Uranium and Neptunium Hexafluorides	344
67. Methods of Purification of Uranium Hexafluoride of Fission Product Impurities	347

7/9

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

68. Combined Methods of Processing Bombarded Nuclear Fuel	356
Bibliography	360
Chapter 13. Pyrometallurgical Methods of Processing Bombarded Nuclear Fuel	360
Bibliography	360
Part V. Processing of Radio-Chemical Production Wastes	367
Chapter 14. Extraction of Trans-Uranium Elements and Fission Products from Radio-Chemical Production Wastes	367
69. General Information	367
70. Areas of Application of Actinides and Possibilities of Industrial Use	368
71. Extraction of Neptunium and Plutonium	372
72. Extraction of Amerisium, Curium, and other Trans-plutonium Elements	381
73. Extraction of Fission Products from Radioactive Wastes	394
Bibliography	399
Chapter 15. Processing and Storage of Radioactive Wastes	400
74. Classification of Radioactive Wastes	400
75. Characteristics of Radioactive Wastes	401
76. Methods of Processing Liquid High-Activity Wastes	406

8/9

- 32 -

USSR

UDC 621.039.59(075.8)

SHEVCHENKO, V. B., Khimicheskaya Tekhnologiya Obluchennogo Yadernogo Goryuchego, Moscow, Atomizdat Press, 1971, 448 pages.

77. Methods of Processing Liquid Medium- and Low-Activity Wastes	422
78. Methods of Processing Gaseous Radioactive Wastes	431
79. Methods of Processing Solid Radioactive Wastes	434
80. Storage of Radioactive Wastes	436
Bibliography	438
Conclusions	438
Subject Index	440

USSR

UDC 542.61:546.799.3

ZAKHARKIN, B. S., ZEMLYANUKHIN, V. I., and SHEVCHENKO, V. B.

"Amine Extraction of Neptunium (IV) from Nitrate Solutions"

Leningrad, Radiokhimiya, Vol 12, No 4, 1970, pp 577-584

Abstract: The authors investigated the extraction properties of amines of various structures with respect to the nitrate of tetravalent neptunium using the isotope Np-239. Specimens were prepared by irradiating uranium dioxide. After irradiation and aging, the uranium dioxide powder was dissolved in 1.5 M nitric acid. Neptunium was isolated from the solution by amine extraction. The nature of the gamma spectrum and rate of decay were used to check purity. Primary aliphatic, secondary aliphatic and aliphatic-aromatic, and tertiary aliphatic-aromatic and aliphatic amines were used. Basically, 0.1 M solutions of the amines in m-xylene were prepared. To form monoitrates of the amines, the organic solutions were treated with nitric acid in equimolar quantities. The neptunium was stabilized in the tetravalent state by ferrous nitrate in hydrazine or by hydrazine along with the application of heat in a 4-6 M nitrate solution for one hour at 80°C. The distribution coefficients of neptunium were studied during re-extraction, thus eliminating possible errors due to inextractable forms. Mixing of phases was done for five minutes at 20±2°C. Diffusion coefficients were calculated from the ratio of the peaks 1/2

USSR"

ZAKHARKIN, B. S., et al., Radiokhimiya, Vol 12, No 4, 1970, pp 577-584

corresponding to the gamma line of Np-239 at 87 Kev. The accuracy of the method for a single determination is $\pm 0.30\%$ with 0.95 reliability. From three to five determinations were made. The variation in the extraction properties of the amines studied is explained from the standpoint of the basicity of the amines as well as the polarity of the salts which they form.

2/2

1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--PREPARATION OF BLOOD ABOARD SHIPS -U-
AUTHOR--(03)-GURIN, N.N., SHEVCHENKO, V.D., KALEKO, S.P.
COUNTRY OF INFO--USSR
SOURCE--VOENNO-MED ZH 1. 62-64. ILLUS. 1970
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BLOOD PROTEIN, BLOOD TRANSFUSION, SHIP AUXILIARY EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3009/0138

STEP NO--UR/0177/70/001/000/0062/0064

GIRC ACCESSION NO--AP0139003

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0139003

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SCHEMES FOR ORGANIZING THE COLLECTION AND PREPARATION OF BLOOD ABOARD VARIOUS TYPE SHIPS ARE PRESENTED. COLLECTION TEAMS OF 5, 9, AND 11 PERSONS ARE RECOMMENDED WHEN HANDLING LESS THAN 40, 41-80, AND GREATER THAN 80 DONORS, RESPECTIVELY. THESE SCHEMES WERE PRACTICAL, AND BLOOD THUS COLLECTED HAS BEEN USED TO PREPARE BLOOD PROTEIN HYDROLYZATE, BUT IS ALSO SUITABLE FOR TRANSFUSION WITH NO COMPLICATIONS.

UNCLASSIFIED

USSR

KOVPIK, O. F., KORNILOV, YE. A., KOLYADA, YU. YE., SHAPIRO, V. D., and SHEVCHENKO, V. I.

"Electron-Beam Excitation of Low-Frequency Oscillations in a Hot Plasma Confined by a Mirror Machine"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 10, Oct 72, pp 2056-2061

Abstract: The article describes results of a study of the interaction of an electron beam with a hot plasma in a mirror machine and the heating of the plasma by ion-sound oscillations excited by the beam. The results indicate the following:

1. An electron beam effectively interacts with a hot plasma, exciting ion-sound instability.
2. Scattering of the beam electrons by the ion-sound oscillations and their capture by the mirror machine can result in the creation of large electrostatic potentials, the presence of which causes the appearance of centrifugal instabilities.

1/2

USSR

KOVPIK, O. F., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 10, Oct 72,
pp 2056-2061

3. Effective ion heating is possible in the interaction of an electron
beam with a hot plasma.

The authors thank YA. B. FAYNEBERG for the suggested subject and for
discussing the work, S. M. KRIVORUCHENKO for helping in the measurements, and
L. I. BOLOTIN for his interest in the work.

2/2

USSR

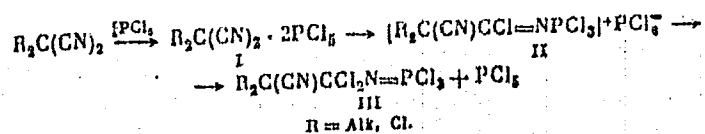
UDC 546.185

KORNUTA, P. P., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Kiev Academy of Sciences Ukrainian SSR

"Phosphorylation of Dinitriles of Disubstituted Malonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 788-791

Abstract: Dinitriles of disubstituted malonic acids react with phosphorus pentachloride to form only acyclic compounds.



1/2

USSR

KORNUTA, P. P., and SHEVCHENKO, V. I., Zhurnal Obshchey Khimii, Vol 40, No 4, Apr 70, pp 788-791

Compounds (I), (II) or (III) are obtained depending on the reaction conditions and the nature of the R radical. Complex compounds (I) are comparatively readily converted to hexachlorophosphorates of N-trichlorophosphoniumdialkylcyanoiminoacetic acid chlorides (II) and trichlorophosphazo-1,1-dichloro-2-cyanoalkanes (III). The authors thank A. V. KIRSANOV for his advice and assistance.

2/2

USSR

UDC 546.185

S
SHEVCHENKO, V. I., KOVAL', A. A., and PISANENKO, N. P.

"Phenoxylation of Trichlorophosphazo-1,1,2,2-tetrachloroalkanes and N-Dichlorophosphonyl-2,2-dichloroiminocarboxylic Acid Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1005-1010

Abstract: Trichlorophosphazo-1,1,2,2-tetrachloroalkanes react with phenols at 80-130° to give triaroxyphosphazo-1,1,2,2-tetrachloroalkanes, which split at 130-170° into 2,2-dichlorocarbonitriles and triaroxydichlorophosphorus. Triaroxyphosphazo-1,1,2,2-tetrachloroalkanes are hydrolyzed with water to give 2,2-dichlorocarbonitriles and triaryl phosphates. The same compounds are obtained by the interaction of trichlorophosphazo-1,1,2,2-tetrachloroalkanes with an excess of phenols at 130-170°. N-dichlorophosphonyl-2,2-dichloroiminocarboxylic acid chlorides react with phenols in the presence of triethylamine or with sodium arylates to give aryl esters of N-diaroxyphosphonyl-2,2-dichloroiminocarboxylic acids, which are readily hydrolyzed

1/2

- 56 -

USSR

SHEVCHENKO, V. I., et al., Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1005-1010

with water or atmospheric moisture to give stable diaryl esters of 2,2-dichlorocarbacylamidophosphoric acids.

The authors thank A. V. KIRSANOV for his advice.

2/2

USSR

UDC: 8.74

SHEVCHENKO, V. F.

"Isolating Nonhomogeneity Sections of a Random Function by the Fisher Test"

Tr. Zap.-Sib. n.-i. geologorazved. nef. in-t (Works of the West Siberian Scientific Research Institute of Geological Petroleum Prospecting), 1972, vyp. 55, pp 212-214 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V654 [author's abstract])

Translation: A standard program in Minsk-22 codes. The program is designed for isolating nonhomogeneities of a random function by comparing the variances of two neighboring intervals. The length of the comparison interval must be selected equal to the assumed extent of the sections of disruption of homogeneity.

1/1

USSR

UDC: 518:517.948

TIKHONOV, A. N., SHEVCHENKO, V. G., ZAIKIN, P. N., ISHKHANOV, B. S.,
MECHENOV, A. S.

"Calculating the Cross Section of a Photonuclear Reaction From Experimental Information"

Moscow, Vestnik Moskovskogo Universiteta: Ser. III, Fizika, Astronomiya,
Vol 14, No 3, May/Jun 73, pp 317-325

Abstract: The authors examine certain questions of computer calculation of the numerical value of the cross section of a photonuclear reaction $\sigma(k)$ in accordance with an indirect phenomenon -- the yield of emission products of the reaction $Y(E)$. The paper describes a modification of the Penfold-Leiss method with parametrization of the working step. Also described is a regularizing algorithm in which the sampling criterion is the degree of smoothness of the approximation. Model problems are presented to illustrate the effectiveness of using these algorithms.

1/1

- 56 -

1/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--PHOTOPROTON CROSS SECTIONS FOR NUCLEI WITH (1F-2P) SHELL -U-

AUTHOR--(05)-ISHKHANOV, B.S., KAPITONOV, I.M., PISKAREV, I.M., SHEVCHENKO, V.G., SHEVCHENKO, O.P.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(3), 485-91

DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--PHOTONUCLEAR REACTION, PROTON SPECTRUM, EXCITATION CROSS SECTION, INTEGRAL CROSS SECTION, NICKEL ISOTOPE, CHROMIUM ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FKAME--1991/1053

STEP NO--UR/0367/70/011/003/0485/0491

CIRC ACCESSION NO--AP0110743

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110743

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHOTO-P CROSS SECTIONS WERE MEASURED FOR PRIME52 CR, PRIME58 NI, AND PRIME60 NI FROM THRESHOLD TO 30 MEV. THE P WITH ENERGIES GREATER THAN 1 MEV WERE REGISTERED. A NO. OF MAX. WERE FOUND. THE INTEGRAL CROSS SECTIONS FOR PRIME52 CR, PRIME58 NI, AND PRIME60 NI WERE 240,570, AND 320 MEV-MB, RESP. THE ANOMALOUSLY HIGH VALUE OF THE PHOTO-P PRODUCTION CROSS SECTION FOR PRIME58 NI, AS WELL AS THE SHIFT OF THE CENTERS OF GRAVITY FOR THE PHOTO-P CROSS SECTIONS TOWARD HIGHER EXCITATION ENERGIES, AS COMPARED TO THE PHOTO-N CROSS SECTION WHICH WAS OBSERVED FOR PRIME51 CR AND PRIME60 NI, CAN BE EXPLAINED BY THE INFLUENCE OF THE ANALOG STATES. FACILITY: INST. YAD. FIZ., MOSK. GOS. UNIV., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

1/2 009

TITLE--GIANT DIPOLE RESONANCE ON NICKEL ISOTOPES -U-

AUTHOR--(05)-GORYACHEV, B.I., ISHKANOV, B.S., KAPITONOV, I.M., PISKAREV,
I.M., SHEVCHENKO, V.G.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(2), 252-9

DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--NICKEL ISOTOPE, INTEGRAL CROSS SECTION, PARTICLE PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1980/0367

STEP NO--UR/0367/70/011/002/0252/0259

CIRC ACCESSION NO--AP0048639

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16DCT70

2/2 009

CIRC ACCESSION NO--AP0048639

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTIVE CROSS SECTIONS OF PHOTO N PRODUCTION FOR PRIME58 NI AND PRIME60 NI IN THE DOMAIN OF THE GAINT DIPOLE RESONANCE ARE DESCRIBED. THE INTEGRAL CROSS SECTION UP TO 30 MEV IS 310 FOR PRIME58 NI AND 620 MEV-MB. FOR PRIME60 NI. TOTAL ABSORPTION CROSS SECTIONS FOR THE ISOTOPES ARE CONSTRUCTED AS THE SUMS OF THE PHOTO N AND PHOTO P CROSS SECTIONS. THE VALUES DO NOT AGREE WELL WITH THOSE COMPUTED BY VARIOUS MODELS. FACILITY: INST. YAD. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--PHOTOPROTONS FROM THE BORON 11 NUCLEUS -U-
AUTHOR-(04)-SOROKIN, YU.I., SHARDANOV, A.KH., SHEVCHENKO, V.G., YUREV,
B.A.
COUNTRY OF INFO--USSR
SOURCE--YAD. FIZ. 1970, 11(1), 8-18
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PHOTONUCLEAR REACTION, PROTON SCATTERING, BORON ISOTOPE,
BREMSSTRAHLUNG, ANGULAR DISTRIBUTION, PROTON SPECTRUM, EXCITATION CROSS
SECTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0176 STEP NO--UR/0367/70/011/001/0008/0018
CIRC ACCESSION NO--AP0048468
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0048468

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ENERGY DISTRIBUTIONS OF PHOTO P EMITTED FROM PRIME11 B NUCLEI, EXPOSED TO THE 16.5- AND 18.5-MEV BREMSSTRAHLUNG AND THE PHOTO P ANGULAR DISTRIBUTION AT 18.5 MEV WERE MEASURED. THE P WERE REGISTERED IN NUCLEAR PHOTOPLATES. IN THE PHOTO P SPECTRA A GREAT NO. OF MAX. WAS OBSD. THAT WERE DUE TO THE EXCITATION OF LEVELS OF THE PRIME11 B NUCLEUS IN THE ENERGY REGION 12-18.5 MEV. THE CROSS SECTIONS WERE OBTAINED FOR THE REACTION PRIME11 B(GAMMA, P) PRIME10 BE WITH THE FINAL PRIME10 BE NUCLEUS IN THE GROUND STATE AND IN THE 1ST EXCITED STATE. THE RADIATION WIDTHS OF THE OBSD. LEVELS OF PRIME11 B WERE ESTD. THE ANAL. OF THE RESULTS ENABLES ONE TO DEDUCE INFORMATION CONCERNING THE MULTIPOLARITIES OF THE GAMMA TRANSITIONS AS WELL AS SPINS AND PARITIES OF THE EXCITED STATES OF THE PRIME11 B NUCLEUS. FACILITY: INST. YAD. FIZ., MOSK. GOS. UNIV., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 546.185

KOSINSKAYA, I. M., PINCHUK, A. M., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Ukrainian Academy of Sciences

"Phosphorylation of Cyanamides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,396-2,398

Abstract: High reactivity of the triple bond of the nitrile group has been found characteristic of compounds of type R--X-CN (X = O, S, NR), and it is also known that the cyanates and thiocyanates readily add phosphorus pentachloride at the nitrile group. The authors demonstrate experimentally that the dialkylcyanamides and aroylcyanamides also readily add phosphorus pentachloride in the same way. The dialkylcyanamides, depending on the reagents used, are transformed into the acid chlorides, of N,N-dialkyl-N-tetrachlorophosphoiminocarbamic acids; the aroylcyanamides, from hexachlorophosphate, yield the acid chlorides of (N-aroylimino)trichlorophosphazocarbonic acids.

1/1

- 15 -

USSR

UDC 546.185

KORNUTA, P. P., KALENSKAYA, A. I., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Ukrainian Academy of Sciences

"Phosphorylation of 1,1-Dicyano-2-Aminoalkenes-1"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,390-2,395

Abstract: Following the authors' recent proof that 1,1-dicyano-2-amino-2-arylethylenes react with phosphorus pentachloride at the amino and dicyano groups to form cyclic compounds, the corresponding reactions of 1,1-dicyano-2-aminoalkenes-1 were studied. Seventeen different 1,1,5-trichloro-4-cyano-3-alkyl-1,2,6-phosphadiazines were produced in this way from the corresponding aminoalkenes. Physico-chemical data for the end-products, yields, and procedural details, are given.

1/1

USSR

UDC 546.185

KOSINSKAYA, I. M., PINCHUK, A. M., SHEVCHENKO, V. I., and BESPAL'KO, G. K.

"Phenyldichloro- and Diphenylchlorophosphazocycloalkanes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1903-1906

Abstract: Replacement of one chlorine atom by a phenyl radical in tri-chlorophosphazocycloalkanes does not prevent their conversion to tricyclic compounds in a reaction with hydrogen chloride, but lowers drastically the thermal stability of the products. The presence of two phenyl radicals in the phosphazo group stops completely the conversion of the phosphazocycloalkanes into tricyclic compounds.

1/1

- 35 -

USSR

UDC: 547.944/945

BAN'KOVSKAYA, A. N., SHEYCHENKO, V. I., BAN'KOVSKIY, A. I., VECHKANOVA, L. D.,
KABANOV, V. S., All Union Scientific Research Institute of Medicinal Plants

"Ergovalide -- a New Alkaloid From Ergot Spurs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 1, 1973, p 134

Abstract: Paper chromatography was used to isolate a new alkaloid from ergot spurs. The base has empirical formula $C_{21}H_{26}O_2N_4$, a melting point of 152.2-154°C (from methanol), $d_{20}^{20} 1.2080$ (c 0.47, chloroform), M 366 (mass-spectrometrically determined), and has been named "ergovalide". Chemical, UV, NMR and mass spectral analysis suggest that the base has the structure of N lysergylvalylamide.

1/1

USSR

UDC: 533.951

INDYKUL, V. P. and SHEVCHENKO, V. I.

"Instability of a Cyclotron Wave of Finite Amplitude"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, No 8, 1973, pp 1287-1300

Abstract: This paper considers a circularly polarized wave propagated along an external cyclotron magnetic field, one of the waves transmitted by resonant plasma particles. The analysis begins with the kinetic equation for electrons. The solution to a system of equations determining the trajectories of the particles in the phase space in the circularly polarized wave is found. The authors limit themselves to the case in which the wave amplitudes are comparatively low. A determination is made of the distribution function of the resonant particles affected by the fundamental wave. Conditions for the excitation of the "violet satellite" and "red satellite" are discussed. It is shown that the instability of the cyclotron wave is the result of the interaction of "whistlers" with particles captured by the fundamental wave. The authors express their thanks to V. D. Shapiro for his assistance and advice.

1/1

Titanium

USSR

UDC: 669.295.017:669.295:548.53

ALFEROVA, N. S., SHEVCHENKO, V. I., All-Union Scientific Research and Design
Engineering Institute of the Pipe Industry
"Influence of Degree of Deformation on Recrystallization of Titanium Alloy"

Metallovedeniye i Termicheskaya Obrabotka Metallov, No 9, 1973, pp 52-57.

Abstract: This work studies the influence of the nature of cold-deformed structure of a metal on the mechanism of recrystallization, as well as the dependence of structure on the degree of cold deformation. Studies were performed on technically pure alpha titanium (VT1) and thermally unstable beta-titanium alloy VT15 (3% Al, 6.5% Mo, 10.5% Cr). The data produced confirmed that the degree of deformation influences not only the size of the recrystallized grains, but also the mechanism of recrystallization. The dependence of the recrystallization process on degree of deformation is apparently related to peculiarities of the accumulation of free energy upon deformation. With comparatively slight degrees of deformation, the surface energy of grain boundaries increase primarily due to local increase in dislocation density and disruption of boundary segregations. As the degree of deformation is increased above the critical level, the grains are broken into fragments and blocks,

1/2

USSR

Alferova, N. S., Shevchenko, V. I., *Metallovedeniye i Termicheskaya Obrabotka Metallov*, No 9, 1973, pp 52-57.

which during annealing form centers for primary recrystallization. Increasing the degree of deformation still further increases the crushing of the grains, increasing the level of free energy and reducing the activation energy of the recrystallization process, correspondingly decreasing the recrystallization temperature. This dependence of the mechanism of recrystallization on the degree of cold deformation apparently holds true for other cold-deformed metals and alloys as well.

2/2

- 55 -

USSR

UDC 546.185

KORNUTA, P. P., KALENSKAYA, A. I., LOBANOV, O. P., and SHEVCHENKO, V. I.,
Institute of Organic Chemistry, Academy of Sciences, UkrSSR

"Phosphorylation of Monocyanoaminoethylenes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43(105), No 2, Feb 73, pp 261-267

Abstract: 1,1-Dicyano-2-aminoalkenes react with phosphorus pentachloride forming cyclic phosphorylation products -- 1,1,5-trichloro-4-cyano-3-R-1, 2,6-phosphadiazines. In contrast, monocyanoaminoethylenes which are capable of cis-trans isomerization react with phosphorus pentachloride in two ways forming acyclic trichlorophosphazo-1,2-dialkyl(diaryl)-2-cyanoethylenes and cyclic 1,1,5-trichloro-3,4-dialkyl(diaryl)-1,2,6-phosphadiazines. Monocyanoaminoethylenes are much more reactive than dicyanoaminoethylenes. The latter react with phosphorus pentachloride at 80° and higher, while the monocyanoaminoethylenes react already at 20-25°, slightly exothermally. Acyclic trichlorophosphazocycanoethylenes isomerize in the presence of HCl to cyclic phosphadiazines.

1/1

USSR

UDC 546.185

PINCHUK, A. M., KOSINSKAYA, I. M., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Academy of Sciences of the Ukrainian SSR

"Dimerization of Trichlorophosphazocyanoalkanes"

Leningrad, Zhurnal Obshechey Khimii, Vol 42(104), No 3, Mar 72, pp 522-526

Abstract: Trichlorophosphazocyanoalkanes undergo an addition reaction with a mole of hydrogen chloride to form 2,2,5-trichloro-4,4-dialkyl-2-phosphamidazolinium oxides which, when heated and treated with triethylamine or phosphorus pentachloride, eliminate a mole of hydrogen chloride, forming a mixture of trichlorophosphazocyanoalkanes and 2,2,4,7,7,9-hexachloro-5,5,10,10-tetraalkyl-1,3,6,8-tetraaza-2,7-diphosphatricyclo[5,3,0,0^{2,6}]-decadienes-3,8. The yield and thermal stability of the latter decreases with an increase in the volume of the alkyl substituents associated with the nitrogen atom.

1/1

USSR

UDC: 533.9

ABRAMOVICH, V. U. and SHEVCHENKO, V. I.

"Nonlinear Theory of Dissipative Instability of a Relativistic Beam in a Plasma"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, vol 17, No 2, 1972, pp 329-332.

Abstract: There is a great deal of interest in investigating the interaction of a relativistic beam of charged particles with a dense plasma, particularly with regard to the study of the dissipative instability of the beam when the plasma is the result of the situation $\nu > \delta$, where ν is the collision frequency and δ the beam instability increment. This paper investigates the quasilinear approximation to the beam relaxation in the development of the instability, for the case of $\omega_p \gg \nu \gg \delta$, where the frequency ω_p is a function of the plasma density. It is assumed that in the region of the wave numbers Δk_z many harmonics are lost. Equations of the quasilinear approximation are therefore used to investigate the nonlinear stage of the instability development. The unidimensional case corresponding to the presence

1/2

USSR

ABRAMOVICH, V. U., et al., Ukrainskiy Fizicheskiy Zhurnal, vol 17, No 2, 1972, pp 329-332

of a strong external magnetic field directed parallel to the beam velocity vector is considered, and the question of the excitation of a three-dimensional spectrum of oscillations is analyzed. The authors are connected with the Physico-technical Institute, Ukrainian SSR Academy of Sciences, at Kharkov.

2/2

- 74 -

USSR

UDC 517.946

SHEVCHENKO, V. I.

"Formula for the Index of a Problem of the Directional Derivative Type for a System of Two Harmonic Functions With Three Independent Variables"

Kiev, Matematicheskaya Fizika, No. 10, 1971, pp 112-119

Abstract: A previous work of the author is extended and a rigorous proof is given for a formula previously announced for the index κ of the boundary value problem of the directional derivative type for a system of two harmonic functions

$$\kappa = 2\sigma, \tag{1}$$

where σ is the rotation of the vector field

$$\{p \cdot v, q \cdot v, (p \times q) \cdot v\}, \tag{2}$$

defined in terms of the coefficients of the boundary conditions of the problem. In the above formula the dot and cross denote scalar and vector products of the vectors, and v is the unit vector of the internal normal to the surface S at the

1/2

USSR

SHEVCHENKO, V. I., *Matematicheskaya Fizika*, No. 10, 1971, pp 112-119

point y . It is shown that the field \mathbb{Z}_2 can also be defined in terms of the second pair of vectors r and s . $\sigma(\phi)$ is also determined for the second-order symbolic matrix $\Psi(\tau)$. The proof used is the ideas of S. G. Mikhlin and essentially hinges on the homotopic classification of boundary value problems of this type that was given previously by the author. Certain consequences of the formulas are discussed.

2/2

- 17 -

USSR

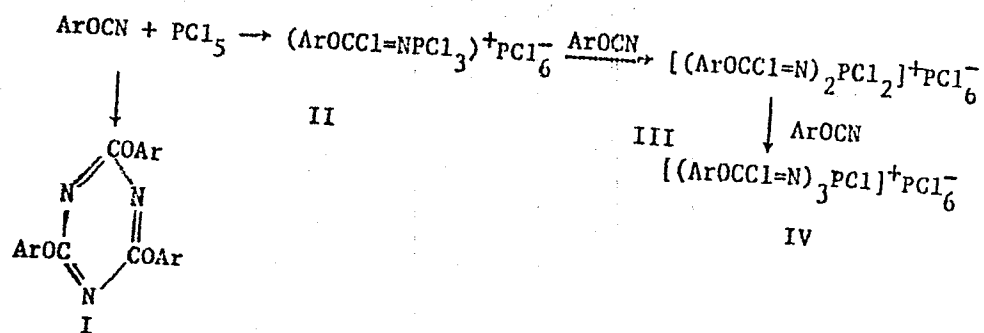
UDC 546.185

SHEVCHENKO, V. I., KULIBABA, N. K., KIRSANOV, A. V.

"Phosphorylation of Aromatic Cyanates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 102-105

Abstract: The interaction of cyanates with phosphorus pentachlorides does not stop in the stage of formation of hexachlorophosphorates (III) but proceeds farther with the formation of hexachlorophosphorates of tris-N-(aroylchloromethylenimino)monochlorophosphoniums (IV) which are also the final products of the reaction:

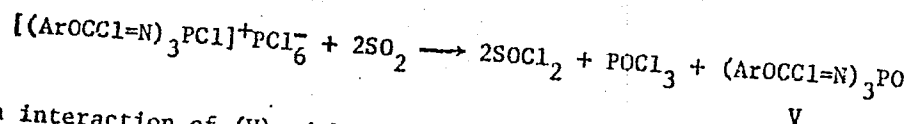


1/2

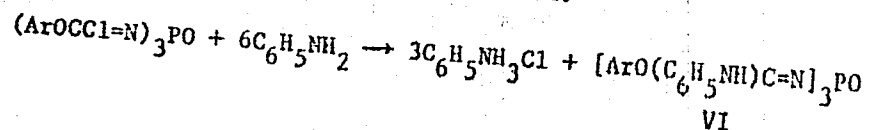
USSR

SHEVCHENKO, V. I., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 102-105

The aromatic cyanates react with phosphorus pentachloride with a mole ratio of 1.5:1 or with excess cyanate with the formation of (IV). The latter react easily with sulfur dioxide with the formation of tris-N-N(aroxychloromethylene)triamides of phosphoric acid (V):



On interaction of (V) with aniline, tris-N-(aroxyphenylaminomethylene) triamides of phosphoric acid (VI) are formed:



2/2

- 36 -

USSR

SHEVCHENKO, V. I.

"On Some Boundary Value Problems for a Holomorphic Vector"

Kiev, Matematicheskaya Fizika, No 8, 1970, pp 172-187

Abstract: The article considers Hilbert and Riemann-Hilbert boundary value problems for a holomorphic vector. Noetherianism conditions are indicated and the index of these boundary value problems is calculated. There is also introduced for the Hilbert problem an adjoint problem in terms of which the necessary and sufficient condition for solvability of the initial problem is formulated. I. N. VEKUA's method of reducing a boundary value problem to an equivalent system of singular integral equations is used for the study of these problems.

1/1

USSR

UDC 546.185

KORNUA, P. P., KALENSKAYA, A. I., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Academy of Science Ukrainian SSR

"Reaction of Phosphorus Pentachloride with 1,1-Dicyano-2-amino-2-arylethylenes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, pp 938-992

Abstract: It was previously shown that both malonic and lakylnalonic acid nitriles react with phosphorus pentachloride to form trichlorophosphazo-1-chloro-2-cyano-2-R-ethylenes (I) and their cyclic isomers -- 1,1,3,5-tetrachloro-4-R-1,2,6-phosphadiazines (II). In the present work it was shown that 1, 1-dicyano-2-amino-2-arylethylenes also react with phosphorus pentachloride to form 1, 1,5-trichloro-4-cyano-3-aryl-1,2,6-phosphadiazines, which in the presence of sodium phenolate convert to 1,1,5-triphenoxy-4-cyano-3-aryl-1,2,6-phosphadiazines. The acyclic isomers were also formed in the same reaction. A. V. KIRSANOV collaborated in this work.

1/1

- 57 -

USSR

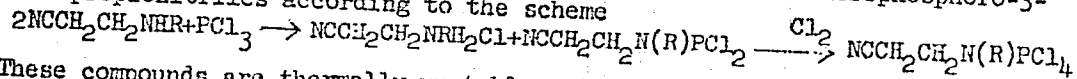
UDC 546.185

KOSINSKAYA, I. M., PINCHUK, A. M., and SHEVCHENKO, V. I., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of N-Alkyl(aryl)-3-aminopropionitriles"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 105-109

Abstract: The authors synthesized N-alkyl(aryl)-N-tetrachlorophosphoro-3-aminopropionitriles according to the scheme



These compounds are thermally unstable and decompose at 20°. They readily react with sulfur dioxide to give N-alkyl-(aryl)-N-dichlorophosphonyl-3-aminopropionitriles. The latter are very stable, showing no change at 130°. They are phosphorylated by phosphorus pentachloride at the nitrile group to give 2, 2, 3, 3-tetrachloro-3-tetrachlorophosphazo-N-alkyl(aryl)-N-dichlorophosphonylaminopropanes. The latter decompose on heating into phosphorus pentachloride and 2,2-dichloro-3-N-alkyl(aryl)-N-dichlorophosphonylaminopropionitriles.

1/1

USSR

UDC 546.185

KULIBABA, N. K., SHEVCHENKO, V. I., and KIRSANOV, A. V., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Reaction of Butyl Cyanates With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2105-2106

Abstract: Use was made of the relatively stable butyl- and isobutyl cyanates to study the reaction of aliphatic cyanates with phosphorus pentachloride. Unlike aromatic cyanates, butyl cyanates react with phosphorus pentachloride not only at the nitrile group but also at the Alk-O bond to form tetrachlorophosphorus isocyanate (I) and butoxychloromethyleneiminotrichlorophosphonium hexachlorophosphates (II). I is a viscous liquid which decomposes on distillation under vacuum. It may be converted to isocyanatophosphoric diacid chloride (III) which is assumed to be the pure form of I. The hexachlorophosphate (II, $R=C_4H_9$) is a crystalline light yellow substance, readily soluble in methylene chloride, dichloroethane, and is insoluble in ether, CCl_4 and hexane. Hexachlorophosphate with an isobutyl radical is a viscous liquid which decomposes on distillation under vacuum. It can be converted to N-(butoxychloromethyl)amidophosphoric diacid chlorides -- a colorless liquid which can be distilled in vacuum undecomposed.

1/1

- 50 -

USSR

UDC 546.185

SHEVCHENKO, V. I., MOKHAMED EL DIK, PINCHUK, A. M., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Phosphorylation of Benzylidenecyanoacetamides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1949-1954

Abstract: Benzylidenecyanoacetamides $\text{ArCH}:\text{C}(\text{CN})\text{CONHX}$ react with phosphorus pentachloride at the amide and carbonyl groups as well as at the ethylene bond. The unsubstituted amides ($\text{X}=\text{H}$) yield compounds of the type $\text{ArCH}:\text{C}(\text{CN})\text{CON}:\text{PCl}_3$ and $\text{ArCH}:\text{C}(\text{CN})\text{CCL}_2\text{N}:\text{PCl}_3$. When exposed to air humidity or to a calculated amount of acetic acid, $\text{ArCH}:\text{C}(\text{CN})\text{CON}:\text{PCl}_3$ yields N-dichlorophosphonylbenzylidenecyanoacetamide, which can be reacted with PCl_5 to give, most probably, 1,3-diaza-2-phosphacyclohexadienes-3,6. When $\text{ArCH}:\text{C}(\text{CN})\text{CONHCH}_3$ is reacted with PCl_5 the reaction occurs initially at the double bond followed by the amide and carbonyl groups yielding the compounds $\text{ArCH}:\text{C}(\text{CN})\text{CONHCH}_3$, $\text{ArCH}:\text{C}(\text{CN})\text{CCL}(\text{NCH}_3)$, and probably $\text{ArCH}:\text{C}(\text{CN})\text{CONH}(\text{CH}_3)\text{PCl}_2$. The latter is converted to $\text{ArCH}:\text{C}(\text{CN})\text{CONH}(\text{CH}_3)\text{PCl}_2$.

1/2

- 70 -

USSR

SHEVCHENKO, V. I., et al, Zhurnal Obshchey Khimii, Vol 40, No 9,
Sep 70, pp 1949-1954

(CN)CON(CH₃)POCl₂ by reacting it with sulfur dioxide. The authors
thank A. V. KIRSANOV for his advice and help in the work.

2/2

USSR

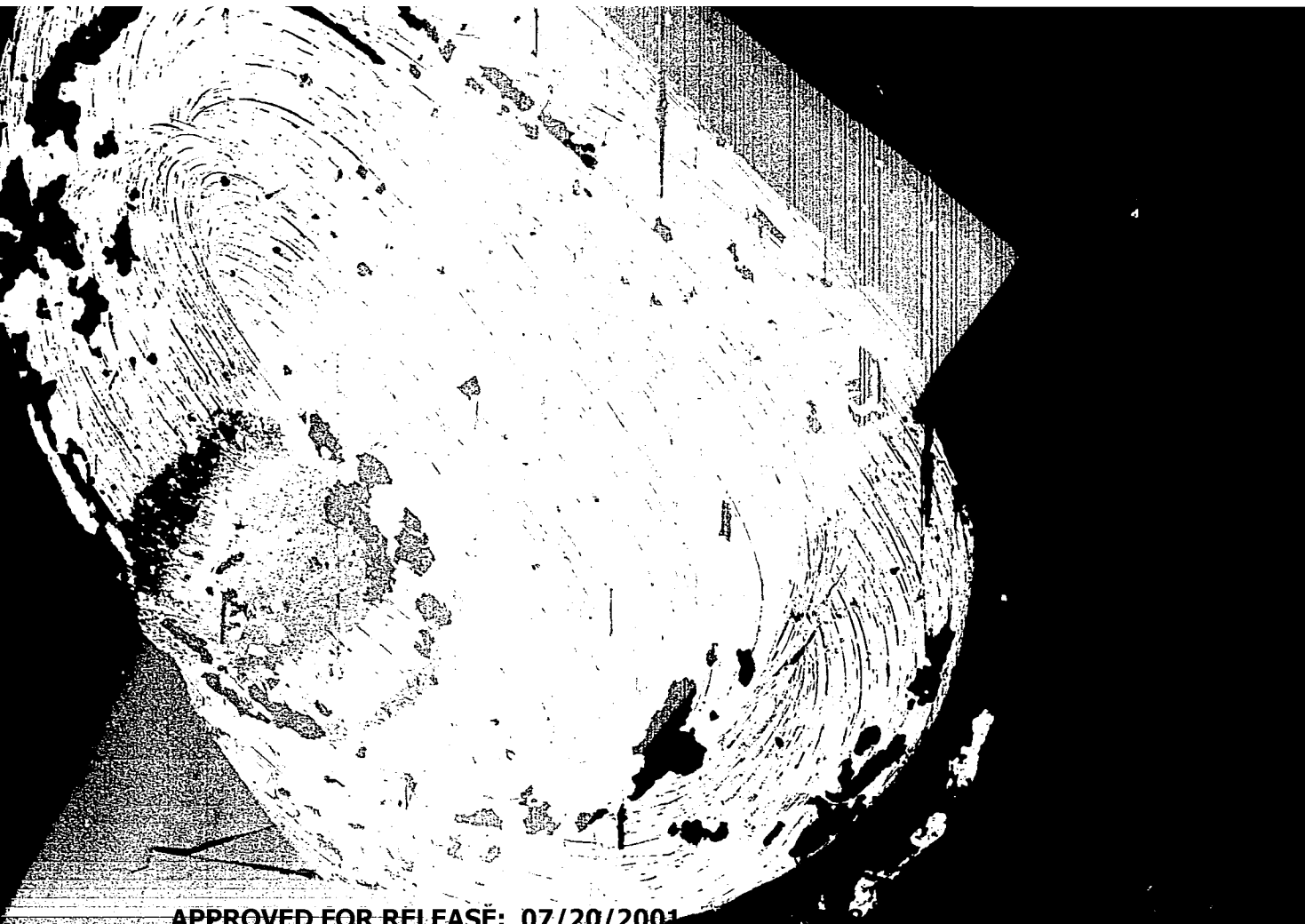
SHAPIRO, V. D.; SHEVCHENKO, V. I. (Physicotechnical Institute, Ukrainian Academy of Sciences)

"Nonlinear Theory of Relaxation of a 'Monoenergetic' Beam in a Plasma"
Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; March, 1971;
pp 1023-35

ABSTRACT: The dynamics of relaxation of an initially "monoenergetic" beam in a plasma is investigated. It is shown that instability of beam particles captured in the oscillation potential well play an important role in the relaxation process. Equations are derived which describe oscillation excitation and diffusion in the beam, with allowance for this instability. An inspection of the equations reveals that the distribution function of the beam is almost plateau-shaped for times $t \sim \omega_p^{-1} n_0/n_1$ (ω_p is the plasma frequency and n_1, n_0 the beam and plasma densities respectively). During the following relax-

1/2

- 48 -



UDC 546.185

USSR

SHEVCHENKO, V. I., NIZHNIKOVA, Ye. Ye., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of 2-Chloro-3-Arylpropionitriles"

Leningrad, Zhurnal Obsheei Khimii, Vol 40, No 6, Jun 70, pp 1219-1225

Abstract: Trichlorophosphazo-1,1,2,2-tetrachloro-3-arylpropanes, with C_6H_5 , o - ClC_6H_4 , p - ClC_6H_4 , p - BrC_6H_4 , o - $NO_2C_6H_4$, p - $NO_2C_6H_4$, m - $CH_3C_6H_4$, p - $CH_3C_6H_4$, or p - $CH_3OC_6H_4$ as the aryl group, were prepared by the reaction of the corresponding 2-chloro-3-arylpropionitriles with PCl_5 . The products are easily hydrolyzed by atmospheric moisture. Work-up of the products yielded the corresponding 2,2-dichloro-3-arylpropionic acid nitriles or N -dianilidophosphonyl-2,2-dichloro-3-arylaminopropionic acid anilides, depending on the procedure used.

1/1

.. 34 ..

UDC 632.95

USSR

SHIDANKOV, D. F., SHEVCHENKO, V. I., KOVAL', A. A., and RUDAVSKIY, V. P.,
Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Herbicide"

USSR Authors' Certificate No 246960, filed 11 Apr 67, published 13 Jan 70
(from *KZh-Khimiya*, No 20 (II), 25 Oct 70, Abstract No 20 N626P by S. LYULANSKAYA)

Translation: Compounds of the general formula $X_3CC(OR) = NP(O)(OR)_2$ (I ; $X = Cl, F$; $R = C_1 - C_5$ -alkyl) did not act on plants when applied to the soil.
When sprayed on plants in a dose of 5-10 kg/ha, I 's ($R = Pr, n-C_5H_{11}$; $X = Cl$ and $h = Bu, X = F$) suppress radishes and buckwheat 70-85% and do not harm
oats and wheat.

USSR

UDC 546.185

SHEVCHENKO, V. I., LITOVCHENKO, N. R., KUKHAR', V. P., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of 1,1,2-Tricyanoalkanes with Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1229-1234

Abstract: Trichlorophosphazopylenes (I) which are obtained by the reaction of 1,1,2-tricyanoalkanes with PCl_5 , easily add chlorine at the double bond to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3,3-dialkylpropanes. I yield cyclic compounds on hydrolysis. With excess water, they are hydrolyzed to 2-amino-3,3-dialkyl-4-cyano-5-chloropyrrolenes, whereas with a stoichiometric amount of water the hydrochlorides are obtained. Trichlorophosphazo-1-chloro-2,3-dicyano-3,3-dialkyl-1-propylenes react with chlorine to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3,3-dialkylpropanes which are hydrolyzed with excess water to yield 1-chloro-1,1,2-tricyanoalkanes.

1/1

- 33 -

USSR

UDC 547.743.1

SHEVCHENKO, V. I., and LITOVCHENKO, M. R., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Reaction of 1,1,2-Tricyano-2-arylalkanes With Phosphorus Pentachloride"

Kiev, Dopovidi Akademii Nauk Ukrainiskoi RSR, Seriya B, No 2, Feb 70, pp 167-170

Abstract: Reaction of phosphorus pentachloride with 1,1,2-tricyano-2-arylalkanes in refluxing benzene yields acyclic trichlorophosphazo-1-chloro-2,3-dicyano-3-arylalkenes-1 (I). Reaction of PCl_5 with 1,1,2-tricyano-2,2-diphenylethane is analogous. With a slight excess of water (I) hydrolyzes easily yielding 5-chloro-4-cyano-3-aryl-3-R-2-aminopyrrolines. Trichlorophosphazoalkenes add chlorine to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3-arylalkanes, which can be hydrolyzed to 1-chloro-1,1,2-tricyano-2-arylalkanes. Aminopyrrolines are colorless crystalline compounds soluble in acetone, alcohol, and dioxane, but insoluble in ether, benzene, hexane, and water; they are very weak bases. They dissolve in concentrated HCl forming hydrochlorides.

1/1

173 008

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--PHOSPHORYLATION OF DINITRILES OF DISUBSTITUTED MALONIC ACIDS -U-

AUTHOR--(02)-KORNUA, P.P., SHEVCHENKO, V.I.

COUNTRY OF INFO--USSR

S

SOURCE--ZH. D8SHCH. KHIM. 1970, 40(4), 788-91

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHORUS CHLORIDE, ORGANIC NITRILE COMPOUND, SULFUR OXIDE, TRIAZINE, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1482

STEP NO--UR/0079/70/040/004/0788/0791

CIRC ACCESSION NO--AP0135147

UNCLASSIFIED

UDC 546.185

USSR

KULIBABA, N. K., SHEVCHENKO, V. I., and KIRSANOV, A. V., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Reaction of Butyl Cyanates With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 2105-2106

Abstract: Use was made of the relatively stable butyl- and isobutyl cyanates to study the reaction of aliphatic cyanates with phosphorus pentachloride. Unlike aromatic cyanates, butyl cyanates react with phosphorus pentachloride not only at the nitrile group but also at the Alk-O bond to form tetrachlorophosphorus isocyanate (I) and butoxychloromethyleneiminotrichlorophosphonium hexachlorophosphates (II). I is a viscous liquid which decomposes on distillation under vacuum. It may be converted to isocyanatophosphoric diacid chloride (III) which is assumed to be the pure form of I. The hexachlorophosphate (II, $R=C_4H_9$) is a crystalline light yellow substance, readily soluble in methylene chloride, dichloroethane, and is insoluble in ether, CCl_4 and hexane. Hexachlorophosphate with an isobutyl radical is a viscous liquid which decomposes on distillation under vacuum. It can be converted to N-(butoxychloromethyl)amidophosphoric diacid chlorides -- a colorless liquid which can be distilled in vacuum undecomposed.

1/1

- 60 -

USSR

UDC 546.185

SHEVCHENKO, V. I., MOKHAMED EL DIK, PINCHUK, A. M., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Phosphorylation of Benzylidenecyanoacetamides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 1949-1954

Abstract: Benzylidenecyanoacetamides $\text{ArCH}:\text{C}(\text{CN})\text{CONHX}$ react with phosphorus pentachloride at the amide and carbonyl groups as well as at the ethylene bond. The unsubstituted amides ($\text{X}=\text{H}$) yield compounds of the type $\text{ArCH}:\text{C}(\text{CN})\text{CON}:\text{PCl}_3$ and $\text{ArCH}:\text{C}(\text{CN})\text{CCl}_2\text{N}:\text{PCl}_3$. When exposed to air humidity or to a calculated amount of acetic acid, $\text{ArCH}:\text{C}(\text{CN})\text{CON}:\text{PCl}_3$ yields N-dichlorophosphonylbenzylidenecyanoacetamide, which can be reacted with PCl_5 to give, most probably, 1,3-diaza-2-phosphacyclohexadienes-3,6. When $\text{ArCH}:\text{C}(\text{CN})\text{CONHCH}_3$ is reacted with PCl_5 the reaction occurs initially at the double bond followed by the amide and carbonyl groups yielding the compounds $\text{ArCHClCCl}(\text{CN})\text{CONHCH}_3$, $\text{ArCHClCCl}(\text{CN})\text{CCl}:\text{NCH}_3$, and probably $\text{ArCHClCCl}(\text{CN})\text{CONH}(\text{CH}_3)\text{PCl}_4$. The latter is converted to ArCHClCCl
1/2

- 28 -

V. I. et al, Zhurnal Obshchey Khimii, Vol 40, No 9,
p 1949-1954
ON(CH₃)POCl₂ by reacting it with sulfur dioxide. The authors
thank A. V. KIRSINOV for his advice and help in the work.

2/2

USSR

SHEVCHENKO, V. I., et al, Zhurnal Obshchey Khimii, Vol 40, No 9,
Sep 70, pp 1949-1954

$(CN)CON(CH_3)POCl_2$ by reacting it with sulfur dioxide. The authors
thank A. V. KIRSANOV for his advice and help in the work.

2/2

USSR

SHAPIRO, V. D.; SHEVCHENKO, V. I. (Physicotechnical Institute, Ukrainian Academy of Sciences)

"Nonlinear Theory of Relaxation of a 'Monoenergetic' Beam in a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; March, 1971; pp 1023-35

ABSTRACT: The dynamics of relaxation of an initially "monoenergetic" beam in a plasma is investigated. It is shown that instability of beam particles captured in the oscillation potential well play an important role in the relaxation process. Equations are derived which describe oscillation excitation and diffusion in the beam, with allowance for this instability. An inspection of the equations reveals that the distribution function of the beam is almost plateau-shaped for times $t \sim \omega_p^{-1} n_0/n_1$ (ω_p is the plasma frequency and n_1, n_0 the beam and plasma densities respectively). During the following relax-

1/2

- 48 -

USSR

DHAPIRO, V. D., et al., Zhurnal Eksperimental'noy i Teoretiche-
skoy Fiziki, Mar 71, pp 1023-1035

ation stage for which the characteristic time is

$$t \sim \Omega^{-1} n_0^{-1/3} (\Omega = \omega_p (n_i/n_0)^{1/3})$$

is the oscillation frequency of the captured particles), accelerated particles
appear in the beam and a velocity distribution which is close to Maxwellian is
established.

2/2

USSR

UDC 546.185

SHEVCHENKO, V. I., NIZHNIKOVA, Ye. Ye., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of 2-Chloro-3-Arylpropionitriles"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1219-1225

Abstract: Trichlorophosphazo-1,1,2,2-tetrachloro-3-arylpropanes, with C_6H_5 , $o\text{-ClC}_6H_4$, $p\text{-ClC}_6H_4$, $p\text{-BrC}_6H_4$, $o\text{-NO}_2C_6H_4$, $p\text{-NO}_2C_6H_4$, $m\text{-CH}_3C_6H_4$, $p\text{-CH}_3C_6H_4$, or $p\text{-CH}_3OC_6H_4$ as the aryl group, were prepared by the reaction of the corresponding 2-chloro-3-arylpropionitriles with PCl_5 . The products are easily hydrolyzed by atmospheric moisture. Work-up of the products yielded the corresponding 2,2-dichloro-3-arylpropionic acid nitriles or *N*-dianilidophosphonyl-2,2-dichloro-3-aryliminopropionic acid anilides, depending on the procedure used.

1/1

- 34 -

USSR

UDC 632.95

SHIRANKOV, D. F., SHEVCHENKO, V. I., KOVAL', A. A., and RUDAVSKIY, V. P.,
Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Herbicide"

USSR Authors' Certificate No 246960, filed 11 Apr 67, published 13 Jan 70
(from RZh-Khimiya, No 20 (II), 25 Oct 70, Abstract No 20 R626P by S. LYUBANSKAYA)

Translation: Compounds of the general formula $X_3CC(OR) = NP(O)(OR)_2$ (I; X = Cl, F; R = C₁-C₅-alkyl) did not act on plants when applied to the soil. When sprayed on plants in a dose of 5-10 kg/ha, I's (R = Et, n-C₅H₁₁; X = Cl and R = Bu, X = F) suppress radishes and buckwheat 70-85% and do not harm oats and wheat.

1/1

USSR

UDC 546.185

SHEVCHENKO, V. I., LITOVCHENCKO, N. R., KUKHAR', V. P., Institute of Organic Chemistry, Academy of Sciences Ukrainian SSR

"Phosphorylation of 1,1,2-Tricyanoalkanes with Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchei Khimii, Vol 40, No 6, Jun 70, pp 1229-1234

Abstract: Trichlorophosphazopylenes (I) which are obtained by the reaction of 1,1,2-tricyanoalkanes with PCl_5 , easily add chlorine at the double bond to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3,3-dialkylpropanes. I yield cyclic compounds on hydrolysis. With excess water, they are hydrolyzed to 2-amino-3,3-dialkyl-4-cyano-5-chloropyrrolenes, whereas with a stoichiometric amount of water the hydrochlorides are obtained. Trichlorophosphazo-1-chloro-2,3-dicyano-3,3-dialkyl-1-propylenes react with chlorine to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3,3-dialkylpropanes which are hydrolyzed with excess water to yield 1-chloro-1,1,2-tricyanoalkanes.

1/1

- 33 -

UDC 547.743.1

USSR

SHEVCHENKO, V. I., and LITVCHENKO, M. R., Institute of Organic Chemistry, Kiev, Academy of Sciences Ukrainian SSR

"Reaction of 1,1,2-Tricyano-2-arylalkanes With Phosphorus Pentachloride"

Kiev, *Dopovidi Akademii Nauk Ukrainskoi RSR, Seriya B*, No 2, Feb 70, pp 167-170

Abstract: Reaction of phosphorus pentachloride with 1,1,2-tricyano-2-arylalkanes in refluxing benzene yields acyclic trichlorophosphazo-1-chloro-2,3-dicyano-3-arylalkenes-1 (I). Reaction of ICl₃ with 1,1,2-tricyano-2,2-diphenylethane is analogous. With a slight excess of water (I) hydrolyzes easily yielding 5-chloro-4-cyano-3-aryl-3-R-2-aminopyrrolines. Trichlorophosphazoalkenes with chlorine to form trichlorophosphazo-1,1,2-trichloro-2,3-dicyano-3-arylalkanes, which can be hydrolyzed to 1-chloro-1,1,2-tricyano-2-arylalkanes. Aminopyrrolines are colorless crystalline compounds soluble in acetone, alcohol, and dioxane, but insoluble in ether, benzene, hexane, and water; they are very weak bases. They dissolve in concentrated HCl forming hydrochlorides.

1/1

173 008

TITLE--PHOSPHORYLATION OF DINITRILES OF DISUBSTITUTED MALONIL ACIDS -U-

PROCESSING DATE--27NOV70

AUTHOR--(02)-KORNUA, P.P., SHEVCHENKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 788-91

DATE PUBLISHED-----70

S

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHORUS CHLORIDE, ORGANIC NITRILE COMPOUND, SULFUR OXIDE, TRIAZINE, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1482

STEP NO--UR/0079/T0/040/004/0788/0791

CIRC ACCESSION NO--AP0135147
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/3 008

CIRC ACCESSION NO--AP0135147
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALL EXPTS. BELOW WERE RUN UNDER ANHYD. CONDITIONS. STIRRING R SUB2 C(CN) SUB2 WITH 2 MOLES POWD. PCL SUB5 IN THE PRESENCE OF CCL SUB4 3-4 HR UNTIL HOMOGENEUSLY DISPERSED GAVE R SUB2 C(CN) SUB2. 2PCL SUB5 (R EQUALS ME AND PRI. AN EQUIMOLAR MIXT. OF PCL SUB5 AND CCL SUB2 (CN) SUB2 KEPT 25-30 DAYS IN A CLOSED FLASK UNTIL HOMOGENEOUS, GAVE AFTER TREATMENT WITH SO SUB2 TO DECOMP. ANY PCL SUB5, 67PERCENT CL SUB2 C(CN)CCL SUB2 N:PCL SUB3, B SUB0.05 81-20DEGREES, M. 37-40DEGREES. HEATING 0.05 MOLE CCL SUB2 (CN) SUB2 AND 0.165 MOLE PCL SUB5 IN A SEALED TUBE 35-40 HR AT 150-60DEGREES, COOLING UP TO MINUS 40DEGREES PRIOR TO OPENING THE TUBE, WASHING THE PPT. WITH PETROLEUM ETHER, AND TREATING THE LIQ. WITH SO SUB2 GAVE SOM PCL SUB3 AND 86PERCENT 2,4,6,TRICHLORO,1,3,5,TRIAZINE, M. 144-50DEGREES, AND A RESIDUE OF 63PERCENT CCL SUB3, CCL SUB2 N:PCL SUB3 (I), B SUB0.04 74-6DEGREES, N PRIME20 SUBD 1.5615; THE LATTER ALSO FORMED FROM 0.08 MOLE NCCCL SUB2 CCL SUB2 N:PCL SUB3 AND 0.1 MOLE PCL SUB5 IN 30-40 HR AT 150-60DEGREES, WHICH ALSO GAVE SOME PCL SUB3 AND TRICHLOROTRIAZINE. I AND ACOH GAVE 54PERCENT CCL SUB3 CCL:NPUCL SUB2, B SUB0.5 74-6DEGREES, M 43-50DEGREES. KEEPING AN EQUIMOLAR MIXT. OF PCL SUB5 AND ME SUB2 C(CN) SUB2 WITH A LITTLE CCL SUB4 4-5 DAYS IN A CLOSED FLASK AFTER TREATMENT WITH SO SUB2, 100PERCENT ME SUB2 C(CN)CCL SUB2 N:PCL SUB3, M 53-80DEGREES, ALSO PREPD. BY REFLUXING THE ABOVE MIXT. IN PHCL 5 HR, (THE PRODUCT B SUB0.03 86-9DEGREES, M. 55-9DEGREES) IN 75PERCENT YIELD.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

3/3 008

CIRC. ACCESSION NO--AP0135147

ABSTRACT/EXTRACT--THIS AND 1 MOLE ACOH IN C SUB6 H SUB6 REACTED VIGOROUSLY
 TO YIELD OVERNIGHT 57PERCENT ME SUB2 C(CN)CCL:NPOCL SUB2, B SUB0.03
 78-80DEGREES, N PRIME20 SUBD 1.5037, D PRIME20 1.4425. HEATING ET SUB2
 C(CN) SUB2 WITH 2 MOLES PCL SUB5 IN C SUB6 H SUB6 15 HR, AND TREATING
 THE MIXT. WITH SO SUB2 GAVE 43PERCENT ET SUB2 C, (CN)CCL:NPOCL SUB2, B
 SUB0.02 93-50DEGREES, M. 38-42; SIMILARLY WAS PREPD. THE PR SUB2 C
 ANALOG, 40PERCENT, B SUB0.03 104-6DEGREES, 1.4940, 1.2680.
 FACILITY: INST. LRG. KHIM., KIEV, USSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--REACTION OF 1,1,2,TRICYANO,2,ARYLALKANES WITH PHOSPHORUS
PENTACHLORIDE -U-
AUTHOR--(02)-SHEVCHENKO, V.I., LITOVCHENKO, N.R. S
CCOUNTRY OF INFO--USSR
SOURCE--DOPOV. AKAD. NAUK UKR, RSR, SER. B 1970, 32(2), 167-70
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HETEROCYCLIC NITROGEN COMPCUND, CYANIDE, ALKANE, PHOSPHORUS
CHLORIDE, CHLORINATION, HYDROLYSIS
CCNTRGL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1103 STEP NO--UR/0442/70/032/002/0167/0170
CIRC ACCESSION NO--AT0124758
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE---30OCT70

2/2 009

CIRC ACCESSION NO--AT0124758

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

ABSTRACT. FORMULAS SHOWN ON MICROFICHE. THE
HCL SALTS WERE STABLED ONLY IN CONCD. OF HCL SOLN. AND WERE ALSO
OBTAINED BY TREATING I WITH HCO SUB2 H OR HYDRDLYZING I WITH CALED. AMT.
H SUB2 O IN ETHER.

FACILITY: INST. ORG. KHEM., KIEV, USSR.

UNCLASSIFIED

PROCESSING DATE--20NOV70

UNCLASSIFIED

1/2 014

TITLE--REACTION OF TRICHLOROPHOSHAZO COMPOUNDS WITH CHLORINE OXIDE -U-

AUTHOR--(02)-KORNUA, P.P., SHEVCHENKO, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 551-3.

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC PHOSPHORUS COMPOUND, ORGANIC AZO COMPOUND, CHLORINATED ORGANIC COMPOUND, AROMATIC HYDROCARBON

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1291

STEP NO--UK/0079/70/040/003/0551/0553

CIRC ACCESSION NO--AP0134905

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 014

CIRC ACCESSION NO--AP0134965

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. ADDING 0.055 MGLE CL SUB20 TO 0.05
 MGLE RCCL SUB2 CCL SUB2 H:PCL SUB3 IN CCL SUB4 GAVE, AFTER 10-12 HR,
 30-90PERCENT RCCL SUB2 CCL:APCCL SUB2: R EQUALS ME, B SUB2 95-70DEGREES,
 A.45-6DEGREES; R EQUALS ET, B SUB2 100-1DEGREES. SIMILAR REACTION OF CL
 SUB2 G WITH ARSO SUB2 H:PCL SUB3 IN CCL SUB4 GAVE AFTER 2 DAYS AT ROOM
 TEMP. RC SUB6 H SUB4 SO(CCL):NPOCL SUB2 (I): R EQUALS H, OIL; P,ME, OIL;
 P,CL,M. 70-4DEGREES; A,NU SUB2, OIL. I TREATED WITH C SUB6 H SUB6 GAVE
 IN 10-15 MIN 65-90PERCENT ARSO SUB2 NHPOCL SUB2 55-65PERCENT PHCL. I
 COULD NOT BE DISTD. WITHOUT EXTENSIVE DECOMP. AND HAD STRONG OXIDIZING
 ABILITY; THEY LOST 0.2-0.3PERCENT OF THEIR ACTIVE CL IN 1 DAY AT ROOM
 TEMP., BUT DECCMPD. RAPIDLY AT 70DEGREES. I OXIDIZED HI, TO IODINE, AND
 CHLORINATED ALIPHATIC AND AROM. HYDROCARBONS. FACILITY: INST.
 ORG. KHIM., KIEV, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

1/2 016

TITLE--SOLID ROTOR -U-

AUTHOR--(05)-SCHASTLIVYY, G.G., SHEVCHENKO, V.I., LYCHKO, I.I.,
SUSHCHOKSLYUSARENKO, I.I., OBUKHOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--USSR 248053

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI NO 23

DATE PUBLISHED--05JAN70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--PATENT, ELECTRIC MOTOR, ALTERNATING CURRENT, THERMAL
STABILITY, EDDY CURRENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/1593

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

CIRC ACCESSION NO--AA0121970

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AA0121970

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. SOLID ROTOR USED FOR AN A. C. ELECTRIC MOTOR ACHIEVES A HIGHER THERMAL STABILITY OF DAMPING SYSTEM DURING STARTING AND IN ASYMMETRICAL OPERATION. THE ROTOR DAMPING SYSTEM INCLUDES TEETH (1) AND METAL WEDGES (2) IN SLOTS (3). THE SHORTING RINGS (4,5) ARE MADE BY FORMING A LAYER OF ELECTRICALLY MOLTEN COPPER ON THE END OF THE ROTOR AND IN A RECESS OF THE SHAFT; THE ROTOR SLOTS ARE MILLED AFTERWARDS. WEDGES (2) ARE IN CONTACT WITH THE SHORTING RING ALONG ITS THICKNESS (A). IN ASYMMETRICAL OPERATION EDDY CURRENTS ARE INDUCED IN THE TEETH AND WEDGES WHICH ARE SHORTED BY THE RINGS (4,5).
FACILITY: INSTITUT ELEKTRODINAMIKI AN UKRAINSKOY SSR, INSTITUT ELEKTROSVARKI IM. YE. O. PATONA I LYS'VENSKIY TURBOGENERATORNIY ZAVOD.

UNCLASSIFIED

Acc. Nr.

AA0108179

Abstracting Service:
CHEMICAL ABST. 6-70

Ref. Code

UR 0482

3

135550m Tool steel. Zaichenko, S. S.; Polushkin, N. A.;
Kalmykov, Yu. D.; Chichkanov, A. I.; Shchychenko, V. I.;
Biryukova, V. N.; Aref'ev, B. V. U.S.S.R. 280,900 (Cl. C 22c),
06 Jan 1970, Appl. 25 Jul 1968; From *Otkrytiya, Izobret., Prom.*
Obrasly, Tovarnye Znaki 1970, 47(4). 81. Tool steel contg.
lower amts. of scarce materials consisted of: C 0.50-0.65, Si
0.60-0.90, Mn 0.20-0.40, Cr 6.5-8.0, Mo 1.1-1.5, W 0.7-1.1,
V 0.10-0.25, Ti 0.05-0.15%, Fe and impurities the remainder.
MSCL

REEL/FRAME

19891845

8 CK

Molecular Physics

USSR

FAYNBERG, YA. B., SHAPIRO, V. D., SHEVCHENKO, V. I., Physico-Technical Institute,
Academy of Sciences, Ukrainian SSR

"Nonlinear Waves in a Relativistic Electron Beam"
Moscov, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 8,
20 Apr 70, pp 410-413

Abstract: It is known that in stationary electron configurations a decrease of the Coulomb force of repulsion is achieved with the aid of the Lorentz force of the constriction of the currents of relativistic electrons. Because a limitation of the amplitude of a wave in plasma is connected with the effect of the Coulomb repulsion of electrons, the question naturally arises as to the possibility of the excitation of waves of great amplitude during conditions of the compensation indicated. Such a situation can occur during wave propagation along the axis of an electron beam, the particles of which are rotated in azimuth. In this case the wave of charge density leads to oscillations of the current of the particles in the beam

$$i'p(z-v\varphi t) = -ev_0 n'(z-v\varphi t)$$

[v_0 is the azimuthal velocity of the beam] and consequently to formation of a

USSR

FAYNBERG, YA. B., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 8, 20 Apr 70, pp 410-413

magnetic field of the wave $H_r(z-v\varphi t)$. The force of the pinch of the clusters connected with this magnetic field, in which the wave divides the beam

$$F_H = e/c v_0 H_r$$

in the same manner as in the stationary case, is found to be out of phase with the Coulomb force $F_E = -eE_z$ and, with

$$v_0 \approx \sqrt{c^2 - v^2},$$

leads to a significant reduction of the displacement of the electrons in the field of the wave. In the process it is possible to propagate the wave in the beam with an extremely large amplitude of the electrical field without formation of an intersection of the trajectories and overturning of the wave front. This result shows the possibility of effective use of waves in relativistic beams for realization of a plasma method of acceleration proposed by Ya. B. Faynberg (Proc. Symp. CERN, 1,84,1956). For simplicity, in the present work the authors consider the case of rectangular geometry: the electron beam moves with respect to the Y -axis and is limited with respect to the x . The electron charge of the beam is assumed to be partially compensated by ions and, in equilibrium with the Coulomb

2/3

USSR

FAYNBERG, YA. B., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 11, No 8, 20 Apr 70, pp 410-413

repulsion force acting on the electrons $-eE_x$, is compensated by the magnetic force $-e/c v_0 H_z$, where $H_z(x)$ is the magnetic field created by the electron current. The wave originating in such an electron beam is described with the aid of an ordinary hydrodynamical system of equations. Curves are shown for the dispersion dependences for waves in an azimuthal electron beam. The continuous curves pertain to the case of small amplitudes ($\lambda \rightarrow 1$); the dotted curves indicate the case of the maximum possible amplitude determined by a formula developed in the work. 1 fig. 5 ref. Received by editors, 9 March 70.

3/3

USSR

UDC: None

LEVIN, M. B., LYUBARSKIY, M. G., ONISHCHENKO, I. N., SHAPIRO, V. D.,
and SHEVCHENKO, V. I.

"Nonlinear Theory of Electron-Beam Kinetic Instability in a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62,
No 5, 1972, pp 1725-1732

Abstract: In earlier papers on this subject the problem of the excitation of monochromatic plasma waves was solved for the case of an instability in the monoenergetic beam in the plasma. The present paper discusses the kinetic instability which arises in the interaction between the plasma and the beam, with the release of large quantities of heat. This instability is the result of the Landau attenuation effect; a formula is given for the linear increment of the increase in oscillation manifested by the instability. In their analysis, the authors use a system of equations describing the motion of the resonance particles in the wave field and the change in the wave amplitude due to the interaction with those particles, a system valid only if the phase change of the field as a result of that interaction is neglected. Plots are given of what the authors call the phase "mixup" of the resonance particles. Connected with the Physico-Technical Institute of the
1/2

USSR

UIC: None

LEVIN, M. B., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1725-1732

Ukrainian Academy of Sciences, they thank Ya. B. Faynberg and R. Z. Sagdeyev for discussing the work with them, and Yu. N. Dnestrovskiy, D. P. Kostomarov, A. A. Ivanov, and T. Soboleva for their assistance in preparing it.

2/2

- 30 -

USSR

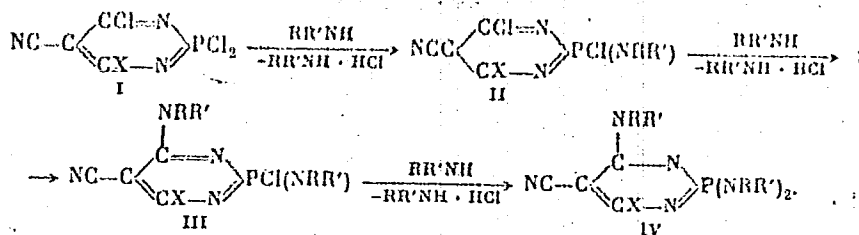
UDC 546.185

SHEVCHENKO, V. I., KALENSKAYA, A. I., and KORNUA, P. P.

"Aminolysis of 1,1,5-trichloro-4-cyano-3-phenyl-1,2,6-phosphadiazino"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 16-21

Abstract: It was reported earlier [P. P. Kornuta, et al., Dopovidi AN USSR, 533, 1970] that on interaction of phosphorus pentachloride with β -enaminonitriles $(NC)_2C=CX-NH_2$, cyclic compounds are formed -- 1,1,5-trichloro-4-cyano-3-alkyl(aryl)-1,2,6-phosphadiazines (I) ($X = Alk, Ar$). In the (I) compounds all the chlorine atoms are reactive. They easily react with the compounds containing a mobile hydrogen atom -- alcohols, amines, acids. With amines the reaction proceeds by the following scheme:



1/2

USSR

SHEVCHENKO, V. I., et al., Zhurnal Gbshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 16-21

This reaction is studied in more detail in the example of 1,1,5-trichloro-4-cyano-3-phenyl-1,2,6-phosphadiazine (Ia, X = C₆H₅). Under the effect of the amines on the 1,1,5-trichloro-4-cyano-3-phenyl-1,2,6-phosphadiazine (Ia), the substitution of the chlorine atoms on the amino groups proceeds in the 1-5-1 sequence. The degree of replacement of the chlorine atoms by amino groups depends on the quantitative relation of the reacting substances and especially strongly on the nature of the hydrocarbon radicals of the amine and the polarity of the solvent.

2/2

- 49 -

USSR

UDC 911.3:616.981.452(574.11)

SHEVCHENKO, V. L., ALTUKHOV, A. A., IVANOV, S. I., YERZHANOV, S. T.,
GRAZHDANOV, A. K., KAYMASHNIKOV, V. I., and MEDZYKOVSKIY, G. A.

"Isolation of a Culture of Plague Bacteria in the Spring of 1968 on the North-east Border of the Volga-Ural Sands"

V sb. Probl. osobo opasn. infektsiy (Problems of Especially Dangerous Infections -- collection of works), Saratov, No 4(14), 1970, pp 135-138 (from RZh-Meditsinskaya Geografiya, No 3, Mar 71, Abstract No 3.36.115)

Translation: The conditions of isolation and results of a study of two strains of plague bacteria in the natural landmark area of Annar, the Furmanovskiy rayon of Uralskiy Oblast are described. Both strains were isolated in a region in which no epizootic diseases have been recorded for more than 20 years and in which great gerbils are almost completely nonexistent. The reduced virulence, as well as some cultural and biochemical characteristics of the cultures studied, clearly differentiate them from the earlier isolated strains on the Volga-Ural Sands both in peak epizootic periods as well as in the inter-epizootic years.

1/1

- 36 -

USSR

UDC 911.3:616.981.452(47)

SHEVCHENKO, V. L., IVANOV, S. I., ALTUKHOV, A. A., and BEREZHNOV, A. Z.
"Method and Tactics of Epizootiologic Survey for Plague in the Volga-Ural
Sands"

V sb. Probl. osobo opasn. infektsiy (Problems of Especially Dangerous
Infections -- collection of Works), Saratov, No 4(14), 1970, pp 129-134
(from RZh-Meditsinskaya Geografiya, No 3, Mar 71, Abstract No 3.36.116)

Translation: Epizootics of plague in the Volga-Ural interfluvial area are most frequent and constant over a wide area extending from the southwestern boundary of the sands through the central part to the north-eastern edge. The significance of the little suslik in the transfer of the pathogen during the summer months is reconfirmed. A scheme of fundamental methods for the examination of plague foci during the period of the interepizootic lull and during active periods is presented. Evaluation of the methods used for laboratory research is presented.

1/1

USSR

UDC: 51

SHEVCHENKO, V. N., PRILUTSKIY, M. Kh.

"Comparison of Two Idealizations in the Problem of Scheduling Theory"

V sb. Vychisl. tekhn. v mashinostroyenii (Computer Technology in Machine Building--collection of works), Minsk, 1970, pp 26-29 (from RZh-Kiber-netika, No 1, Jan 72, Abstract No 1V845)

Translation: It is shown that the Bellman-Johnson problem with n jobs and m machines reduces to an analogous problem with n jobs, $2m - 1$ machines, and the condition that each operation begins and ends respectively no sooner than the operation preceding it begins and ends. V. Tanayev.

1/1

- 18 -

USSR

UDC 621.372.826

SHEVCHENKO, V.V. [Institute Of Radio Engineering And Electronics, AS, USSR]
"The Behavior Of Wave Numbers Of Dielectric Waveguides Behind The Cutoff Value
(Media With Losses)"

Izv.VUZ: Radiofizika, Vol XV, No 2, Feb 1972, pp 257-265

Abstract: Solutions in which thermal losses in inner and outer media are taken into account are found for the dispersion equations for waves of plane and circular (symmetrical waves) homogeneous dielectric waveguides. Particular attention is given to an analysis of the disposition of the solutions in a complex plane of the transverse wave numbers with respect to the plane cut which separates the regions of physical and nonphysical solutions. It is shown that for both waveguides the solutions corresponding to backward improper waves are on a nonphysical sheet of the complex plane. The main differences in the behavior of wave numbers for plane and circular waveguides with respect to the field frequency or waveguide parameters are pointed out. This work was conducted at the Brooklyn Polytechnical Institute (USA). The author thanks Professor L.B. Felsen [transliteration from Russian] for his interest in this work, and all participants of the Seminar on the theory of electromagnetic waves of the Electrophysical Faculty of Brooklyn Polytechnical Institute for discussion of the results of the work. 4 fig. 10 ref. Received by editors, 2 Sept 1971.

1/1

USSR

UDC: 621.785.34.061:669.295

KOLACHEV, B. A., GORSHKOV, Yu. V., ~~SHEVCHENKO, V. V.~~, ARTSYBASOV, Yu. N.

"Structure and Properties of OT4 and OT4-1 Alloys Following Vacuum Annealing"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 5, 1972,
pp 6-10.

Abstract: Removal of hydrogen from a metal by vacuum annealing is the most radical means of preventing hydrogen embrittlement. However, the surface of vacuum-treated metal is quite active and interacts with water vapor even at room temperature. The present article studied the influence of temperature and duration of vacuum annealing on the structure and properties of OT4 and OT4-1 alloys. The chemical composition of the alloys corresponded to the technical conditions. The studies were performed using bars 15 mm in diameter and sheets 1-3 mm thick. It was found that vacuum annealing does decrease hydrogen embrittlement of OT4-1 alloy. Vacuum annealing improves the mechanical characteristics of OT4 alloy tested with stress concentrators, but worsens the mechanical characteristics of OT4-1 alloy under these same conditions. It is recommended that vacuum annealing be performed at 670°C for two hours with subsequent oxidation of the surface of the sheets by allowing air into the system at 300-400°C.

1/1

- 46 -

UDC 621.372.826

USSR

SHEVCHENKO V. V., Institute of Radio Engineering and Electronics of the USSR
Academy of Sciences

"Behavior of Wave Numbers of Dielectric Wave Guides Beyond the Critical Value
(Media with Losses)"

Gor'kiy, Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV, No 2,
1972, pp 257-265

Abstract: The solutions of the dispersion equations for waves of flat and round (symmetric waves) dielectric wave guides were investigated. The heat losses in the internal and external media are considered. The arrangement of the solutions in the complex plane of the transverse wave numbers with respect to the section of the plane which separates the region of physical and non-physical solutions was analyzed. For both wave guides the solutions corresponding to the return noncharacteristic waves are on the nonphysical sheet of the complex plane. Basic differences in the behavior of the wave numbers on variation of the field frequency or wave guide parameters are noted for the flat and round wave guides. The primary difference is that the region of encounter and divergence of the branches for the round wave guide is near zero in the plane. However, the presence of losses in the media to some extent removes the qualitative difference in the behavior of the curves near zero for 1/2

USSR

SHEVCHENKO, V. V., Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, Vol XV,
No 2, 1972, pp 257-265

the flat and round wave guides. In the presence of losses in the external medium in the case of a flat wave guide the possibility arises of direct transition of a surface wave to the resultant wave. On the contrary, in the case of a round wave guide in the presence of losses on the internal medium an intermediate region of variation of the parameters arises for which the wave of the given type is neither a surface wave nor the resultant wave, and the formal solution gives a slow noncharacteristic wave.

The research on which this paper is based was performed at the Brooklyn Polytechnic Institute in the United States of America.

2/2

- 131 -

USSR

SHEVCHENKO, V. V.

UDC: 621.372.8

"Separation of Open Waveguide Fields According to Characteristic and Noncharacteristic Waves"

Gor'kiy, Izvestiya VUZ--Radiofizika, Vol. 14, No. 9, 1971, pp 1242-1249

Abstract: This paper is the continuation of earlier articles by the same author (Akusticheskiy zhurnal, 9, No. 2, 1963, p 215; No. 3, 1963, p 351) who proposed analyzing the field of open waveguides using separation by a system of orthogonal, characteristic waves of mixed, discrete-continuous, spectrum. Such separation permits generalizing the methods of the theory of closed waveguides and applying them to open guides of two and three dimensions. The present paper proposes a modification of this separation for including noncharacteristic waves, in a discrete part of the spectrum along with the characteristic waves. This modified separation is more convenient since it permits computing the amplitudes of the noncharacteristic waves directly rather than through the integral over the continuous part of the spectrum, with the consequent separation of these waves in the form of residues, as was done in

1/2

USSR

SHEVCHENKO, V. V., Izvestiya VUZ--Radiofizika, Vol 14, No 9, 1971, pp 1242-1249

earlier work on the same subject. The proposed modification is based on the analysis of a two-dimensional field of E waves in an open layered waveguide. The author, a member of the Institute of Radio Engineering and Electronics, expresses his gratitude to B. Z. Katsenelenbaum and A. D. Shatrov for their comments.

2/2

- 183 -

USSR

UDC 535.317.2

VERSHININA, L. N., and SHEVCHENKO, V. V., Institute of Radio Engineering and Electronics, Academy of Sciences of the USSR, Moscow

"Quasioptical Channels for the Submillimeter Wave Band"

Moscow, Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71, pp 147-149

Abstract: This paper describes quasioptical submillimeter transmission channels of two types: a confocal lens-type light-guide line based on non-reflecting lenses, and a diaphragmatic light guide made up of iris diaphragms. The lines are constructed in such a way that they can transmit only the fundamental wave mode. The results of experimental measurements of the parameters of the transmission lines are presented. Spectrometers for the submillimeter band were constructed on the basis of the lens-type transmission line. These spectrometers were used for studying the absorption spectra of various solid and liquid dielectrics. The proposed quasioptical lines can be used in various other types of physical research. The authors thank V. V. Meriakri for assistance with development of these transmission lines.

1/1

UDC: 621.372.826

USSR

SHEVCHENKO, V. V., Institute of Radio Engineering and Electronics, Academy of Sciences of the USSR

"On Behavior of the Wave Numbers of Waves in a Dielectric Waveguide Beyond the Critical Value"

Moscow, Izvestiya Vysshykh Uchebnykh Zavedeniy: Radiofizika, Vol 13, No 10, 1970, pp 1528-1531

Abstract: The author considers the dispersion equations for a flat dielectric waveguide (plate), and a cylindrical dielectric waveguide (rod), and also an equation which relates the transverse wave numbers for the field inside the waveguide and outside the waveguide. A simultaneous graphic solution of the three equations is given in coordinates ga, ka , where g and k are the transverse wave numbers for the sections of the wave field inside and outside of the waveguide respectively, and a is the radius of the cylinder (half-thickness of the plate). The equation which relates g and k is represented in this coordinate system as a circle of radius $R = ka(\xi - 1)^{1/2}$, where $k = \omega(\epsilon_0 \mu_0)^{-1/2}$, ϵ_0 and μ_0 are the parameters of the medium outside the waveguide. The ga intercepts of the branches of the dispersion equations have finite positive derivatives. The

1/2

USSR

SHEVCHENKO, V. V., Izvestiya Vysshikh Uchebnykh Zavedeniy: Radiofizika, Vol 13, No 10, 1970, pp 1528-1531

behavior of the graphic solution is examined on the basis of intersection between the circle and a branch of the dispersion equation for a plate. In particular, the behavior of the wave numbers is studied as the frequency of the field and the parameters of the waveguides are varied for wave numbers passing through the critical value and in the region beyond the critical value where the waves are no longer surface waves.

2/2

- 142 -

USSR

UDC 681.3.06:51

SHEVCHENKO, V. V.

"One Class of Parametric Recursive Grammars"

Mat. Obespecheniye ETSVM. Vyp. 3 [Digital Computer Software, No 3 -- Collection of Works], Kiev, 1970, pp 81-94, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V590 by V. Mikheyev).

Translation: A formalism (class of grammars) is studied, allowing the list of methods of expansion of one nonterminal corresponding to a syntactic unit, the "statement" in a word corresponding with data to be either reduced or completely eliminated. It is shown that by placing various limitations on the parameters of grammars, subclasses of grammars can be separated allowing more or less effective control of the development process. As examples, several strictly non-listing parametric recursive type grammars are constructed.