

Acc. Nr: **AP0051959**

Ref. Code: **UR 0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol 68, Nr 3, pp 119-122

COPPER CONTENT IN THE LIVER OF MAN AND EXPERIMENTAL ANIMALS
FOLLOWING ITS ACUTE STIMULATION

Ye. S. Belozersky V. A. Agarkov

Tyumen Medical Institute

Copper content in the liver of humans who died of toxic liver dystrophy and in animals with acute experimental hepatitis was studied by applying spectral analysis. Along with this topography of copper granules was investigated histochemically after Okamoto-Uzman and general morphology, RNA, acid and neutral mucopolysaccharides, glycogen levels studied. In animals the relationship of these indices with the introduction of microdoses of copper by parenteral and enteral routes (0.6 and 0.3 mg/kg) was studied. In acute lesion of the organ reduced copper concentration in the liver and the loss of copper granules by many hepatocyte nuclei were in evidence. Parenteral administration of copper to animals led to a marked increase of Kupffer cells in the liver and exercised normalizing effect on the parenchyma of the affected organ. Enteral and parenteral introduction of copper to animals with acute hepatitis restores concentration of copper in the liver.

REEL/FRA
19820446

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UDC 621.372.823.09.001.24:621.371.572

RELOZEROV, YU.S., ILANIGOV, YU.A., SMORONSKIY, V.YA.

"On The Problem Of The Calculation Of The Critical Frequencies Of Higher-Type Waves In A Hollow Elliptical Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1300-1302

Abstract: The paper considers some distinctive features connected with determination of the critical frequencies of wave of high order and the change of their mutual disposition at any eccentricity. A graph is shown of the dependence of the critical wave numbers of an elliptical waveguide on the eccentricity. 1 fig. 8 ref. Received by editors, 14 April 1971.

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USSR

UDC: 621.372.061

BELOZEROV, Yu. S., UTKIN, Yu. S.

"On Analysis of a Nonlinear Two-Loop System for Phase Automatic Frequency Control"

Tr. Gor'kov. politekhn. in-ta (Works of the Gor'kiy Polytechnical Institute), 1970, 26, No 7, pp 26-31 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A101)

Translation: Transient and steady-state conditions are investigated in a two-loop phase automatic frequency control system with nonlinear amplifier in the "memory" loop. An error signal is sent to the input of the "memory" loop from the phase AFC loop through a second amplifier. The law is found for the change in frequency of the tuned oscillator under the effect of the "memory" loop in nonlinear and linear modes of operation. Two illustrations, bibliography of two titles. N. S.

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USSR

UDC 621.396.668

BELOZEROV, Yu. **B**

"Analysis of the Transient Process of a Two-Loop Phase Automatic Frequency Control Inside a Pulse"

Tr. Gor'kovsk politekhn. in-ta (Works of the Gor'kiy Polytechnical Institute), 1969, 25, No 3, pp 23-25 (from RZh-Radiotekhnika, No 1, Jan 70, Abstract No 1D31, N. S.)

Translation: Calculations are presented for the transient processes in a phase automatic frequency control solving the problem of tuning the frequency of a continuous autogenerator with high frequency at the filling frequency of radio pulses. The first loop of the automatic frequency control is an ordinary loop containing an amplifier, a filter and the control element, and the second loop connected in parallel with the first contains a memory circuit. The parameters of the second loop filter have an insignificant effect on the transient process inside the pulse. The bibliography has four entries.

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1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DITETRACYCLINE AGAINST INFECTIONS -U-
AUTHOR--(05)-LAZAREVA, E.N., BELOZEROVA, O.P., KRYUCHKOVA, A.P., EFIMOVA,
T.I., SITNIKOVA, L.V.
COUNTRY OF INFO--USSR
SOURCE--GER. OFFEN. 1,804,400
DATE PUBLISHED--14MAY70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--TETRACYCLINE, EYE DISEASE, MOLECULAR STRUCTURE, PATENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0001 STEP NO--GY/0000/70/000/000/0000/0000
CIRC ACCESSION NO--AA0123801
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0123801

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPD. (I), USEFUL AGAINST INFECTIONS, ESP. EYE INFECTIONS, WAS PREPD. FROM (II), HCHO, AND PHCH SUB2 NHCH SUB2 CH SUB2 NHCH SUB2 PH (III), IN ISO-BUOH OR TERT-BUOH AT 74-80DEGREES. THUS, II 65.18, III 13.52, AND 40PERCENT HCHO 8.4 G GAVE 45.85 G I. I IS LESS ACTIVE THAN II. FACILITY: ALL UNION SCIENTIFIC RESEARCH INSTITUTE OF ANTIBIOTICS.

UNCLASSIFIED

USSR

UDC 8.74

BELOZERSKAYA, I. L.

"Application of Some Automaton Games for Constructing the Adaptive Structure of a Beam"

V sb. Avtomaty i upr. (Automata and Control--collection of works), Moscow, Nauka, 1972, pp 92-104 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V420)

Translation: A game method of distribution of the connecting lines for which each beam of lines is divided into two subbeams -- rigid and adaptive -- and the control system functions on the adaptive beam, is proposed. The results of simulating the behavior of the beam are presented for different versions of the automaton game and different loads. A conclusion is drawn regarding the efficiency of the proposed method.

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USSR

B

UDC: 577.1

"Second All-Union Biochemical Congress"

Moscow, Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

Abstract: The Second All-Union Biochemical Congress was held on 20-28 Oct 69 at Tashkent under the auspices of the Uzbek Department of the All-Union Biochemical Society. Symposia on evolutionary biochemistry, the connection between the structure and functions of proteins, the biosynthesis of proteins, the biochemistry of membranes, biological oxidation, the functional biochemistry of cell structures, the regulation of enzymatic processes, the structure and function of muscles, and other subjects were conducted. The introductory lecture, which dealt with the evolutionary aspects of nucleic acids, was given by A. N. BELOZERSKIY (Moscow). A leading report in the symposium on evolutionary biochemistry was presented by A. I. OPARIN (Moscow), who discussed theories and experimental results pertaining to the origin of life on earth. A report by V. A. STEPANOV (Moscow) dealt with the evolution of protein enzymes. In the symposium on the biosynthesis of proteins, A. A. BAYEV (Moscow) reported the results of work on the structure of various t-RNA and the properties of molecular fragments of valine t-RNA. In the course of this work, for which a State Prize was awarded, the succession of nucleotides in the valine t-RNA chain was fully clarified. A paper by L. L. KISELEVA

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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

(Moscow) dealt with the role of aminoacyl-t-RNA-synthetases in the synthesis of aminoacyl-t-RNA. t-RNA synthetases specific for methionine, formylmethionine, serine, lysine, and phenylalanine have been identified. A report by R. I. SAGLANIK (Novosibirsk) reviewed work on the suppression of the synthesis of virus nucleic acids by nucleases. Animal experiments showed that administration of DNA-ase prevented the death of mice infected with the viruses of tick-born encephalitis, influenza, and foot-and-mouth disease and made guinea pigs insusceptible for a certain length of time to infection with foot-and-mouth disease. The nucleases did not produce any toxic effects. Application of nucleases in the treatment of human virus diseases showed that they were effective in herpetic keratitis, adenovirus conjunctivitis, tick-born encephalitis, herpes zoster, and other diseases. At present DNA-ase for the treatment of these diseases is being produced industrially. Its application for 4 yrs at major foci of tick-born encephalitis in Siberia yielded very good results. Research is being continued on the use of nucleases in the treatment of virus diseases of farm animals. In the symposium on the biochemistry of membranes, P. G. KOSTRYUK (Kiev) in a report dealing with the transfer of ions in connection with the generation of excitation potentials by nerve cells expressed the opinion that the action of nerve impulse transmitters

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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

is associated not only with changes in membrane permeability, but also involves a direct effect producing transfer of cations. This was confirmed in a paper by A. A. BOLDYREV (Moscow), who found that acetylcholine inhibited the active transfer of Ca^{++} in a sarcoplasm reticulum fraction. The inhibition was exerted on ATP-ase, which brings about transfer of Ca^{++} , and presumably constituted an effect that makes possible the transfer of Ca^{++} from the reticulum during excitation. Boldyrev pointed out that in view of the localization within muscle cells of the enzymes that regulate acetylcholine metabolism, this effect produced by acetylcholine may be directly related to its functioning as an intracellular regulator of excitation processes. Reports given by members of the Kiev school of biochemists (A. V. PALLADIN, O. V. KIRSENKO, G. L. VAVILOVA, M. K. MALYSHEVA, and others) had a bearing on the functioning of Na-K - activated transport ATP-ases in membranes. I. I. IVANOV (Leningrad) found that ATP gelled sarcoplasm proteins of skeletal muscles, whereas Ca^{++} liquefied the gel that formed. He assumed that a reversible gelation produced in this manner is responsible for the plastic tonus of smooth and striated muscles. In a resolution passed by the Congress, progress in biochemical research was reviewed. It was stated that the membership of the Biochemical Society increased from 3500 to 6500 between the First and Second Congress. Institutes of Proteins, Photosynthesis, and Physiology and Biochemistry

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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

of Microorganisms were organized within the Academy of Sciences USSR. It was pointed out that it is necessary to conduct more intensive research in several fields including the structure of proteins in relation to their functional activity, biochemical genetics, and (in view of the importance of this field from the standpoint of solution of general problems of biochemistry) the biochemistry of microorganisms and viruses.

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USSR

UDC 669.15:548

BELOZERSKIY, G. N., GRINBLAT, Yu. N., and SHAPIRO, A. I., Leningrad State University imeni A. A. Zhdanov

"A Study of the YuNDK24 Alloy by the Nuclear Gamma Resonance Method"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 410-412

Abstract: A study was made by the method of nuclear gamma resonance (NGR) of the condition of Fe atoms of the YuNDK24 alloy in various stages of thermomechanical treatment (TMT) and at various durations of tempering. The NGR spectra of seven specimens were taken on a spectrometer providing uniformly accelerated motion. The types of TMT and the Moessbauer parameters of NGR spectra and the magnetic properties of the investigated specimens are discussed by reference to tabulated data. The NGR spectra of two specimens were found to represent a superposition of two spectra with different Moessbauer parameters. Two tables, three bibliographic references.

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1/2 011 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MECHANISM OF TRANSLATION MISTAKES IN VIVO AND IN VITRO -U-
AUTHOR--(03)-MEDNIKOV, B.M., GALIMOVA, L.M., BELOZERSKIY, A.N.
COUNTRY OF INFO--USSR
SOURCE--BIOKHIMIYA 1970, 35(2), 216-23
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--AMINO ACID, ANTIBIOTIC, PYRIMIDINE, NUCLEOTIDE, STREPTOMYCIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3009/0197 STEP NO--UR/0218/70/035/002/0216/0223
CIRC ACCESSION NO--AP0139060
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139060

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SERICIN PRODUCED BY BOMBYX MORI
WORMS FED ON A DIET CONTG. STREPTOMYCIN HAS A SIGNIFICANTLY LOWER
PROPORTION OF THE FOLLOWING AMINO ACIDS IN COMPARISON WITH STD. SERICIN:
VALINE, 15.3PERCENT DECREASE; LEUCINE, 13.3; ISOLEUCINE, 13.2;
THREONINE, 11.6; ARGININE, 8.8; AND SERINE, 4.0, WHILE THE PROPORTION OF
THE FOLLOWING IS INCREASED: GLUTAMIC ACID BY 26PERCENT; LYSINE, 17.6;
ALANINE, 14.0; AND ASPARTIC ACID, 3.7. IT IS SUGGESTED THAT THE
TRANSLATION MISTAKES INDUCED BY THE ANTIBIOTIC IN VIVO ARE COMPARABLE TO
THOSE OBSD. IN CELL FREE SYSTEMS. THE MISTAKES RECORDED IN THE ABOVE
EXPTS. CAN BE INTERPRETED AS FOLLOWS: ALL THE 4 BASES CAN BE READ AS A,
THE PYRIMIDINES CAN ALSO BE READ AS G; IN ADDN., U CAN BE READ AS C AND
G AS A, WHILE A IS ALWAYS TRANSLATED CORRECTLY. THE MISREADING
FREQUENCY OF NUCLEOTIDES U GREATER THAN C GREATER THAN G GREATER THAN A
IS CORRELATED TO THEIR THERMODYNAMIC STABILITY. FACILITY:
MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--RARE BASES IN ANIMAL DNA -U-
AUTHOR-(03)-VANYUSHIN, B.F., TKACHEVA, S.G., BELOZERSKIY, A.N.
COUNTRY OF INFO--USSR
SOURCE--NATURE LONDON 1970, 225(5236), 948-9
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DNA, MAMMAL, REPTILE, AMPHIBIAN, MOLLUSCA, INSECTA, SPONGE,
CHEMICAL COMPOSITION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0233 STEP NO--UK/0000/70/225/000/0948/0949
CIRC ACCESSION NO--AP0119229
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119229

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRESENT KNOWLEDGE OF THE SPECIFICITY OF DNA METHYLATION IN ANIMAL CELLS IS SCANTY AND CONTRADICTORY. THE CONTENT OF 5 METHYLCYTOSINE (I) IN THE DNA FROM 16 ANIMALS BELONGING TO MAMMALIA, REPTILIA, AMPHIBIA, OSTECHTHES, ECHINODERMATA, MOLLUSCA, COELENTERATA AND PORIFERA WAS DETD. G PLUS C PLUS I MOLES-100 MOLES RANGED FROM 44.8 (LIVER OF TESTUDO HORNSFIELDY (TURTLE)) TO 38.5 (SUBERTIES DOMUNCULA (SPONGE): WHOLE ANIMAL). I VARIED FROM 0.5-2.0 MOLES-100 MOLES DEPENDING ON THE SPECIES. THE MORE DISTANT THE SPECIES TAXONOMICALLY, THE GREATER WAS THE DIFFERENCE OF PROPORTION OF I IN THEIR DNA. ATTEMPTS TO FIND N PRIME6 METHYLADENINE IN DNA HYDROLYZATES BY PAPER CHROMATOGRAPHY OR UV SPECTROSCOPY FAILED. I SEEMS TO BE THE ONLY RARE BASE PRESENT CONSISTENTLY IN ALL ANIMAL DNA. FACILITY: LAB. BIOORG. CHEM., MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

BELOZERSKIY G.N.

STUDY OF THE PROCESS OF STRENGTHENING SOLID
BODIES BY MEANS OF NUCLEAR GAMMA-RESONANCE

UDC 669.017.1:519.4

G. N. Belozerskiy, V. N. Gitsovich, O. G. Sokolov, and Yu. P. Khramch.
Dnepropetrovsk State University named A. A. Zhukovskiy, submitted to press 28 Sep-
tember 1971 pages 1244-1246

This work was attempted for the purpose of studying the physical
processes responsible for the strengthening of real bodies, in particular
alloys, by using the method of nuclear gamma-resonance (YaGR).

The application of nuclear gamma-spectroscopy for these purposes
seems to be very justified to us because of its great sensitivity to the phase
composition of the specimens. Aside from this, the strengthening of solids
is associated in one way or another with the change in the structural state
of the crystalline lattice, in particular with the change of the degree of
its defect occurrence, which must be felt on the magnitude of the resonance
absorption factor.

For the investigation, iron-vanadium steel was selected (1% V,
0.2% C) and steel of brand 20KINMP (0.2% C, 3% Ni, 1% Mo, Cr < 1%,
V < 1%), which may be strengthened not only by the hardening method,
by cold rolling but also as a result of the processes of secondary hardening,
caused by the precipitation of dispersed special carbides in the tempering
of hardened specimens.

The experiments were conducted on specimens which had passed
through various types of treatment for the purpose of changing their
strength properties: cold-rolled (degree of deformation 75%); hardened at
1100 and 850°C; and tempered at 700°. Specimens hardened at 850°C were
subjected to further tempering at temperatures of 400, 550, and 650°, in
which the processes of secondary hardening occur.

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*Delivered to the
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Metallurgy & Metallurgy
Vol 34, no 6, 1972*

The spectra were recorded by a 800-channel analyzer of the Mossbauer spectrometer of the electrodynamic type, with a constant acceleration, and were processed on an EVN (electronic computer).

All the spectra are Zeeman groups of six, or, more accurately, by superposition of several groups of six, corresponding to various states of the nearest surroundings of iron atoms. At 1% vanadium, sites with only one replacement atom in the nearest coordinate spheres have a non-disappearing probability. According to data from reference [1], the presence of one atom of vanadium in the first two spheres decreases the field in the iron by approximately 8%, and in the third sphere increases it by 1.6%. Thus, ignoring the effect of the third and subsequent spheres, in simplified phase analysis we may consider the spectrum to be consisting of two groups of six. In this case we will not consider less than 1% of iron atoms, having two or more atoms of vanadium in the first two coordination spheres. The reasonable values of χ^2 obtained by us in the processing of the spectra on the EVN (usually of the order of the number of points of the experimental spectrum) also show the permissibility of such an approximation.

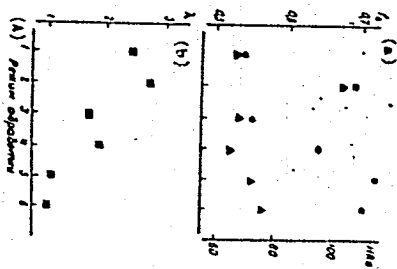


Figure 1. Dependences of the magnitude of the resonance absorption factor f_a (a) and the JIRB hardness (b) upon the form of treatment of the specimen (a). The comparative dependence of χ^2 (■) of the degree of asymmetry of the lines of the spectrum upon the form of the specimen is also shown (b). Along the abscissa axis are plotted: (1) annealing at 900°C; (2), (3) hardening at 1100 and 850°C; (4)-(6) tempering at 400, 550, and 650°C. (A) treatment regime.

USSR

UDC 661.668:621.9-492:541.12.01

BELOZERSKIY, N. A., KRICHEVSKAYA, O. D., PIGROVA, G. D., BELOZERSKIY, G. N.,
SEGAL', L. D.

"Phase Composition of Carbonyl Iron-Nickel Powders"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 8-13.

Abstract: Studies were performed using powders produced by thermal decomposition of a mixture of liquid nickel and iron carbonyls sprayed into the heated space of the decomposition apparatus through a water-cooled sprayer. A thermodynamic evaluation is given for the secondary reactions which are the source of the carbon and oxygen in the carbonyl powder. It is thermodynamically possible for carbon to be present in iron-nickel powders as free carbon (black) or as Fe_3C cementite; nickel carbide may also be formed.

Oxygen can be bonded as wustite, magnetite and nickel oxide. Iron-nickel carbonyl powders with 20, 50 and 80% nickel are studied for content of carbon and oxygen and the phase state of the impurities is determined. Chemical phase analysis shows that in carbonyl iron-nickel powders, carbon is present to a significant extent in the form of the carbide. Oxygen is bonded in the form of Fe_3O_4 . The content of carbide carbon in iron-nickel powders is determined as a function of composition. It is shown that upon transition from a powder with 20% nickel to 80% nickel, the content of carbide carbon decreases 1/2

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USSR

UDC 661.668:621.9-492:541.12.01

BELOZERSKIY, N. A., KRICHEVSKAYA, O. D., PIGROVA, G. D., BELOZERSKIY, G. N.,
SEGAL', L. D., Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 8-13.

creases from 1.20 to 0.86%. It is shown that the content of carbide carbon
in an iron-nickel powder of a given composition is relatively stable.
Fluctuations in the quantity of total carbon in powder of the same composi-
tion as a function of technological parameters of thermal decomposition occur
due to changes in the content of carbon black.

USSR

UDC 661.668:621.9-492

BELOZERSKIY, N. A., SEGAL, L. D., MEL'TSER, R. L., and ZELIKHMAN, L. A.,
State Planning Institute for Nickel Industry

"Iron-Nickel-molybdenum Carbonyl Powders"

Kiev, Akademiya Nauk Ukr SSR, Poroshkovaya Metallurgiya, No 7, Jun 72,
pp i-4

Abstract: A carbonyl method for obtaining iron-nickel-molybdenum powders containing from 0.5 to 5.8% Mo is described. In order to increase the molybdenum content in the powder, an organic solvent such as $\text{Ni}(\text{CO})_4$, $\text{Fe}(\text{CO})_5$, $\text{Mo}(\text{CO})_6$, or acetone is added to the initial carbonyl iron-nickel mixture, or the temperature of the latter is raised. Articles with high magnetic properties are produced from carbonyl iron-nickel-molybdenum powders.

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USSR

UDC 661.668:621.9-492:541.12.01

BELOZERSKIY, N. A., KRICHEVSKAYA, O. D., PIGROVA, G. D., BELOZERSKIY, G. N.,
SEGAL, L. D.

"Phase Composition of Carbonyl Iron-Nickel Powders"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 8-13.

Abstract: Studies were performed using powders produced by thermal decomposition of a mixture of liquid nickel and iron carbonyls sprayed into the heated space of the decomposition apparatus through a water-cooled sprayer. A thermodynamic evaluation is given for the secondary reactions which are the source of the carbon and oxygen in the carbonyl powder. It is thermodynamically possible for carbon to be present in iron-nickel powders as free carbon (black) or as Fe_3C cementite; nickel carbide may also be formed.

Oxygen can be bonded as wustite, magnetite and nickel oxide. Iron-nickel carbonyl powders with 20, 50 and 80% nickel are studied for content of carbon and oxygen and the phase state of the impurities is determined. Chemical phase analysis shows that in carbonyl iron-nickel powders, carbon is present to a significant extent in the form of the carbide. Oxygen is bonded in the form of Fe_3O_4 . The content of carbide carbon in iron-nickel powders is determined as a function of composition. It is shown that upon transition from a powder with 20% nickel to 80% nickel, the content of carbide carbon decreases 1/2

USSR

UDC 661.668:621.9-492:541.12.01

BELOZERSKIY, N. A., KRICHEVSKAYA, O. D., PIGROVA, G. D., BELOZERSKIY, G. N.,
SEGAL', L. D., Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 8-13.

creases from 1.20 to 0.86%. It is shown that the content of carbide carbon
in an iron-nickel powder of a given composition is relatively stable.
Fluctuations in the quantity of total carbon in powder of the same composi-
tion as a function of technological parameters of thermal decomposition occur
due to changes in the content of carbon black.

1/2 025 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--CARBONYLS OF COBALT, NICKEL, OR GROUP VI AND VII METALS -U-
AUTHOR--(02)--BELOZERSKIY, N.A., KRICHEVSKAYA, O.D.
COUNTRY OF INFO--USSR
SOURCE--GER. CFFEN. 1,800,300
DATE PUBLISHED--02JUL70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CARBONYL COMPOUND, CHEMICAL SYNTHESIS, CHEMICAL PATENT, METAL
CARBONYL, COBALT CARBONYL, NICKEL COMPOUND, MOLYBDENUM, TUNGSTEN, CARBON
MONOXIDE, NUCLEATION, RHENIUM, VANADIUM, MANGANESE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1432 STEP NO--GY/0000/70/000/000/0000/0000
CIRC ACCESSION NO--AA013842
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AA0138442

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THESE CARBONYLS WERE PREPD. IN 48-98PERCENT YIELD BY CARBONYLATION OF THE METALS, E.G. MG, W, CO, NI, RE, MN, OR V, OR THEIR SALTS AT 80-200DEGREES AND 30-280 ATM IN CIRCULATING CO, OPTICALLY IN THE PRESENCE OF FE AND (OR) NI. THE GASEOUS PRODUCTS WERE SPRAYED WITH LIQ. FE CARBONYL AND (OR) NI CARBONYL FOR CRYSTAL NUCLEATION IN A COLLECTING CONDENSER AND THE CARBONYL YIELD WAS GREATER THAN OR EQUAL TO 90PERCENT. FACILITY: GIPRONIKEL STATE PLANNING AND SCIENTIFIC RESEARCH INSTITUTE OF THE NICKEL INDUSTRY.

UNCLASSIFIED

1/2 026

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--THE INFLUENCE OF PENTYLENTETRAZOL ON BACKGROUND ACTIVITY OF SINGLE
CORTICAL NEURONES IN STIMULATION OF THE NUCLEUS CAUDATUS -U-
AUTHOR-(02)-ARUSHANYAN, E.B., BELOZERTSEV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 4, PP 75-78
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEURON, CEREBRAL CORTEX, CAT, INHIBITION, BLOOD PRESSURE,
ANALECTIC DRUG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1938/1580

STEP NO--UR/0219/70/069/004/0075/0078

CIRC ACCESSION NO--AP0106326

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0106326

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PENTYLENTETRAZOL (5-10 MG-KG INTRAVENOUSLY) BIPHASICALLY CHANGES THE REACTIONS OF SINGLE NEURONES OF THE SENSORIMOTOR CORTEX OF NONANESTHETIZED CATS TO A DIFFERENT FREQUENCY OF STIMULATION OF THE NUCLEUS CAUDATUS. DURING THE FIRST ONE TWO MINUTES AFTER PENTYLENTETRAZOL INJECTION THERE WAS OBSERVED AN INTENSIFICATION OF CAUDATE INHIBITION AND INHIBITION OF FACILITATORY RESPONSES. SIMULTANEOUSLY THE BACKGROUND ACTIVITY OF NEURONES ACCELERATED. ON THE THIRD FOURTH MINUTE OF REGISTRATION THE INHIBITORY, REACTIONS, ON THE CONTRARY, WEAKENED. THE INITIAL DEEPENING OF CAUDATE INHIBITION IS, APPARENTLY, THE RESULT OF RISE OF THE ARTERIAL PRESSURE CAUSED BY PENTYLENTETRAZOL.

UNCLASSIFIED

USSR

UDC 550.42

SILICHEV, M. K., BELOZERTSEVA, N. V., Yakutsk Territorial Geological Administration

"Distribution of Gold in Sedimentary and Igneous Rocks in the Region of Nezhdaninsk Gold Ore Deposits"

Moscow, Geokhimiya, No 6, Jun 73, pp 931-935

Abstract: In the sedimentary and igneous rocks of the Nezhdaninsk gold ore deposits, unchanged by secondary processes, the coefficient of variation of the gold content is below 84.6%, indicating possible syngenetic nature of its increased concentration in these rocks. Both the sedimentary and igneous rocks in this region contain high concentrations of gold. Maximum levels are found in the pyritiferous siltstones of the lower Permian period and in gabbrodiorites of the Geldian group of blocks. An assumption has been expressed that this increased gold content is connected in some way with the assimilation of the terrigenous rocks of the aleuropelitic composition enriched with this material.

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- 13 -

USSR

UDC 537.226+537.311:33):538

BELOZOROV, D. P., and AKHIYEZER, I. A., Institute of Radiophysics and Electronics of the Ukrainian Academy of Sciences, Kharkov State University imeni A. M. Gorkiy

"Magneto-Elastic Oscillations and Fluctuations in Antiferromagnetic Materials Near Points of Thermal Transition"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 10, Oct 71, pp 1643-1652

Abstract: When the temperature of a crystal reaches a critical value, its spin system becomes unstable. Spin waves, instead of being attenuated, increase in intensity. Instability of the spin system leads to the appearance of anomalous intensification of fluctuations of magnetic and elastic phenomena, which causes an increase of scattering cross sections for slow neutrons and e m. waves.

The spectrum of the antiferromagnetic crystal and of the fluctuation of magnetic and elastic phenomena was investigated in the vicinity of critical temperature. It is shown that at that point an important role is played by the coupling between elastic waves and oscillations of magnetic moments of the sublattices. Thus, at the point, phase velocity becomes smaller than sound velocity, which condition is due to the long-wave fluctuation of the magnetic

1/3

USSR

BELOZOROV, D. P. and AKHIEZER, I. A., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 10, Oct 71, pp 1643-1652

and elastic phenomena. Critical opalescence sharply increases.

It was found that with the propagation of magneto-elastic waves along the anisotropy axis, one transverse sound wave and two modes of the spin wave, both degenerate, are generated. Damping decrements of coupled magneto-elastic waves were determined. Similar phenomena were observed in the transverse propagation of the waves, only this time phase velocity was considerably smaller than the transverse sound velocity, particularly near the critical point. Coupled waves propagating at an angle to the anisotropy axis, further away from the critical point, showed five components: two modes of spin waves, one of the longitudinal sound wave and two degenerate transverse sound waves.

Correlation factors for fluctuation and scattering were computed in the vicinity of the critical point where spin structure is unstable. These showed sharp increases (maxima) near frequencies where the wave vector satisfied scattering equations of the system.

The presence of critical fluctuations in antiferromagnetic materials leads to a sharp increase (near the critical point) of the scattering cross section for light. This is particularly noticeable at high frequencies (radial

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USSR

BELOZOROV, D. P. and AKHIYEZE, I. A., Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 10, Oct 71, pp 1643-1652

frequency ω higher than 10^{14} or 10^{15}), where the scattering cross section is coupled with the fluctuation correlation factor. The scattering cross section also increases sharply because of mutual coupling between e.m. waves and fluctuations, particularly with scattering at small angles.

3/3

USSR

Powder Metallurgy

UDC 629.24:537.311:536.2

BEL'SKAYA, E. A., PELETSKIY, V. E., YAKOVLEV, V. K.

"Experimental Study of the Transfer Properties of Porous Nickel"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 44-50.

Abstract: The authors studied the transfer properties of porous nickel produced by pressing from nickel powder of at least 99.7% purity. The specimens were made from powders of four series differing in particle size (2.5 to less than 0.5 μ in diameter). The porosity was primarily open, but the percentage of closed pores in the compact materials was significant. Porosities varied between 20 and 65%. Heat conductivity was measured in 12 samples, electrical conductivity in 28 samples, using methods assuring errors of less than 10% and 2% respectively. The experimental data produced generally satisfied the formula of Skorokhod for conductivity as a function of porosity for a two-phase statistical mixture.

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1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EXPERIMENTAL INVESTIGATION OF THE HEAT CONDUCTIVITY OF CARBON
GRAPHITE MATERIALS -U-
AUTHOR-(02)-BELSKAYA, E.A., TARABANOV, A.S.
COUNTRY OF INFO--USSR **B**
SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 696-701. 14
REFS. IN RUSSIAN.
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS
TOPIC TAGS--THERMAL CONDUCTIVITY, CARBON, GRAPHITE, POROSITY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2216 STEP NO--UR/0170/70/018/000/0696/0701
CIRC ACCESSION NO--AP0125796
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125796

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE HEAT CONDUCTIVITY OF CARBON GRAPHITE MATERIALS OF A POROSITY FROM 19 TO 80 PERCENT OVER A TEMPERATURE RANGE BETWEEN 500 AND 2200 DEG K. THE METHOD OF DETERMINING HEAT CONDUCTIVITY WAS BASED ON THE SOLUTION TO AN EQUATION DESCRIBING THE STEADY TEMPERATURE FIELD IN AN INFINITE THICK WALLED TUBE. A FORMULA IS DERIVED WHICH PROVIDES A SATISFACTORY DESCRIPTION OF THE EXPERIMENTAL CONDUCTIVITY DATA FOR POROSITIES RANGING FROM 19 TO 50 PERCENT OVER THE ENTIRE EXPERIMENTAL TEMPERATURE RANGE.

FACILITY: AKADEMIIA NAUK SSSR, INSTITUT VYSOKIKH TEMPERATUR, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

AP0047501

Abstracting Service:
NUCLEAR SCI. ABST. 4-70

Ref. Code:
UR0089

B

74018 SEPARATION AND PURIFICATION OF GALLIUM
ISOTOPES BY EXTRACTION-CHROMATOGRAPHIC TECHNIQUE
AFTER ELECTROMAGNETIC SEPARATION. Ad'vasevich, I. K.;
Bel'akova, E. P. At. Energ. (USSR); 28: 64-5 (Jan 1970). (In
Russian).

The extraction-chromatography method was used for the separation and purification of Ga from Fe and Cu impurities. The results showed that this method with ion exchange resulted in gallium oxide with 0.001% Cu and 0.01% Fe. The extraction method described can be used in the electromagnetic method for isotope separation. (R.V.J.)

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USSR

UDC 576.895.4

KOCHKAREVA, A. V., ZAGNIBORODOVA, Ye. N., ZHERNOVOV, I. V., ZAYTSEVA, V. I.,
SHILENKO, V. I., ZABEGALOVA, M. N., AVAKOV, S. M., TASHLIYEV, A. O., BEL'SKAYA,
C. S., and VAZHEV, A. P., Republic Anti plague Station, Institute of Zoology,
Academy of Sciences Turkmen SSR

"Regional Distribution of Ixodid Ticks in Turkmenia"

Ashkhabad, Izvestiya Akademii Nauk Turkmenskoy SSR, Seriya Biologicheskikh
Nauk, No 5, 1971, pp 36-42

Abstract: The 31 species and subspecies of Ixodid ticks (of the total of 49 living in Turkmenia) gathered from 699 geographic points and included in the collection of the station are analyzed for the distribution of their natural habitats and their geological and botanic living conditions. *Hyalomma asiaticum asiaticum* proliferates in large numbers in all four regions (clay desert, sandry desert, cultivated river valleys, and southern mountains). *H. detritum* an. *anatolicum*, *H. an. excavatum*, and *H. pl. plumbeum* thrive mainly in cultivated areas. The most numerous species are *H. as. asiaticum* and *H. numidiana turanica* living in sandy desert and *Ornithodoros tartakovskyi* living in clay desert. *Ixodes redikorzevi*, *Haemaphysalis punctata*, *Rhipicephalus schulzei*, and *R. leporis* were recorded for the first time in the republic.

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USSR

UDC 595.425(574.4)

SHLUGER, Ye. G., and BEL'SKAYA, G. S., Institute of Zoology, Academy of Sciences, Turkmen SSR

"New Finds of Trombiculid Mites (Acariformes, Trombiculidae) on Birds of Turkmenia (Report I)"

Ashkhabad, Izvestiya Akademii Nauk Turkmenskoy SSR, Seriya Biologicheskikh Nauk, No 1, 1972, pp 65-70

Abstract: New species of Trombiculid mites are described, and species found for the first time on birds of Turkmenia (the mountains and foothills of central and western Kopet Dag, Malyy Balkhan, Badkyz and the route of the Karakum Canal from Kerki to Izgant) in the period from 1962 and 1968 are redescribed. *Neoschoengastia lucida* Schluger et Belskaja, *N. aurata* Schluger et Belskaja and *Neotrombicula turkmenica* Schluger et Belskaja, collected from birds of Turkmenia, are new species for science. *Hypogastia meshedensis* Vercammen-Grandjean et al., and *Ornithogasti merops* Vercammen-Grandjean et al., are new species for the fauna of the USSR. *Neotrombicula rosickyi* Daniel et Zanina is redescribed in Turkmenia. Birds are their new hosts.

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USSR

BEL'SKAYA, I. P., MILYUSHKEVICH, G. F., et al (Editors)

Fiziologicheskiye mekhanizmy adaptatsiy zhivotnykh k usloviyam zasushlivoy i aridnoy zon (Physiological Mechanisms of Adaptation of Animals to Conditions of Dry and Arid Zones), Novosibirsk, "Nauka," 1970, 216 pp

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USSR

BEL'SKAYA, I. P., MILYUSHKEVICH, G. F., et al, Fiziologicheskiye mekhanizmy adaptatsiy zhivotnykh k usloviyam zasushlivoy i aridnoy zon (Physiological Mechanisms of Adaptation of Animals to Conditions of Dry and Arid Zones), Novosibirsk, "Nauka," 1970, 216 pp

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USSR

BEL'SKAYA, I. P., MILYUSHKEVICH, G. F., et al, Fiziologicheskiye mekhanizmy adaptatsiy zhivotnykh k usloviyam zasushlivoy i aridnoy zon (Physiological Mechanisms of Adaptation of Animals to Conditions of Dry and Arid Zones), Novosibirsk, "Nauka," 1970, 216 pp

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USSR

BEL'SKAYA, I. P., MILYUSHKEVICH, G. F., et al, Fiziologicheskiye mekhanizmy adaptatsiy zhivotnykh k usloviyam zasushlivoy i aridnoy zon (Physiological Mechanisms of Adaptation of Animals to Conditions of Dry and Arid Zones), Novosibirsk, "Nauka," 1970, 216 pp

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III. Ecological Adaptation

USSR

BEL'SKAYA, I. P., MILYUSHKEVICH, G. F., et al, Fiziologicheskiye mekhanizmy adaptatsiy zhivotnykh k usloviyam zasushlivoy i aridnoy zon (Physiological Mechanisms of Adaptation of Animals to Conditions of Dry and Arid Zones), Novosibirsk, "Nauka," 1970, 216 pp

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6/6

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1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--CRYSTAL STRUCTURE OF POTASSIUM ALUMINUM ETHYLENEDIAMINETETRAACETATE
DIHYDRATE -U-
AUTHOR--POLYNOVA, T.N., BELSKAYA, N.P., MARTYNNENKO, I.I.,
TURKDEGARCIBANUS, D., PORAYKOSHITS, M.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 164-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CRYSTAL STRUCTURE, COMPLEX COMPOUND, POTASSIUM COMPLEX,
ALUMINUM COMPLEX, X RAY STUDY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0445 STEP NO--UR/0192/70/011/001/0164/0165
CIRC ACCESSION NO--AP0104058
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--11SEP70.

CIRC ACCESSION NO--AP0104058

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE OF THE TITLE COMPO., KAIEDTA.2H SUB2 O, WAS DETD. BY SINGLE CRYSTAL X RAY METHODS. THE ORTHORHOMBIC LATTICE PARAMETERS ARE A 22.89, B 10.18, AND C 6.53 ANGSTROM; Z EQUAL 4; AND THE SPACE GROUP IS P2 SUB 1 2 SUB1 2 SUB1. THE COMPD. IS ISOSTRUCTURAL WITH NH SUB4 COEDTA.2H SUB2 O AND RBCOEDTA.2H SUB2 O. THE AL ATOM IS 6 COORDINATE, BEING SURROUNDED BY 4 O ATOMS AND 2 N ATOMS FROM THE EDTA ION (AL-O EQUAL 1.92-2.01 ANGSTROM, AL-N EQUAL 2.03-2.04 ANGSTROM). THE H SUB2 O MOLS. ARE NOT COORDINATED. MARY FRANCES RICHARDSON.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--GASOMETRIC DETERMINATION OF THE COMPOSITION ON ALUMINUM RARE EARTH
METAL ALLOYS -U-
AUTHOR-(02)-BELOV, S.F., BELSKAYA, T.I. **B**
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 282-3
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS
TOPIC TAGS--CHEMICAL ANALYSIS, RARE EARTH METAL, ALUMINUM ALLOY, CESIUM
ALLOY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED.
PROXY REEL/FRAE--3008/0611 STEP NO--UR/0153/70/013/002/0282/0283
CIRC ACCESSION NO--AT0137696
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137696

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CE CONTENT OF AL-CE ALLOYS
CONTG. 0.5-28.5PERCENT CE IS DETD. WITH AN ERROR OF PLUS OR MINUS
2.2PERCENT RELATIVE TO GRAVIMETRIC ANAL. BY DETG. THE EVOLUTION OF H
GASTROMETRICALLY WHEN REACTED 15-20 MIN WITH 20 ML OF 1:2 HCL-0.15-0.20
G SAMPLE OF ALLOY. A SIMPLE VOLUMETRIC APP. AND THE METHOD OF CALCN.
ARE DESCRIBED. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM.
LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--ZONE MELTING OF GALLIUM STUDIED WITH A MATHEMATICAL STATISTICAL
METHOD -U-
AUTHOR--(05)-IVANOVA, R.V., BELSKIY, A.A., RUZINOV, L.P., SLOBODCHIKOVA,
R.I., NOVIKOV, N.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 43-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ZONE MELTING, GALLIUM, ZINC, METAL EXTRACTING, STATISTIC
PROCESS, THERMODYNAMICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1984/0171 STEP NO--UR/0370/70/000/001/0043/0047
CIRC ACCESSION NO--AP0054967
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054967

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SEPN. OF GA FROM ZN BY ZONE MELTING WAS STUDIED WITH APPLICATION OF STATISTICAL METHODS FOR EXPTL. PLANNING. FOR THE ESTN. OF THE EFFECTIVENESS OF THE PROCESS THERMODYNAMIC, MATERIAL, ECONOMIC, AND TECHNOLOGICAL APPROACHES HAVE BEEN CONSIDERED. THE FINAL MATH. MODEL CORRESPONDS TO A SATISFACTORY DEGREE TO THE PROCESS OF ZONE MELTING OF GA. OPTIMAL VALUES OF EFFECTIVITY CRITERIONS AND THEIR CONNECTION WITH INDIVIDUAL FACTORS CONCERNED HAVE BEEN FOUND.

UNCLASSIFIED

AN0017114

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UR9020

TITLE-- SCIENCE-INDUSTRY ALLIANCE

NEWSPAPER-- SOVETSKAYA LITVA, JANUARY 27, 1970, P 1, COLS 1-2

ABSTRACT-- ASSOCIATES OF THE KLAYPEDA NIGHT SCHOOL OF THE KAUNAS POLYTECHNIC INSTITUTE, HEADED BY CANDIDATE OF TECHNICAL SCIENCES E. LANGAS, JOINED V. KHALTUSHIN, CHIEF ENGINEER, N. KOMKOV, CHIEF WELDING ENGINEER, AND V. BELSKIS, SENIOR SUPERINTENDENT OF THE EXPERIMENTAL SECTION OF THE SHIPBUILDING PLANT "BALTIYA", IN DEVELOPING A NEW WELDER FOR THE PLANT.

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USSR

BEL'SKIY, G. Ye., SKRIPNIKOVA, R. A.

"Design of Non-Centrally Compressed Metal Rods with Various Curves of Initial Moments"

Novye Metody Rascheta Stroit. Konstruktsiy [New Methods of Design of Structures -- Collection of Works], Moscow, Stroyizdat Press, 1971, pp 191-195, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V555 by the author's).

Translation: Results are presented from investigation of the load-bearing ability of non-centrally compressed rods with various terminal eccentricities. Rods of materials following the Prandtl diagram are studied; the variability of rigidity along the length of the rod due to the development of plastic deformations is considered. A table is presented of relative corrections to the basic case of non-central compression, allowing rather simple design of metal rods with various curves of initial moments. It is noted that in many cases, the load-bearing ability of such elements can be increased (up to 35-40% depending on type of curve of initial moments) in comparison with calculation according to the applicable norms.

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USSR

UDC: 621.372.413(088.8)

BEL'SKIY, O. A., GLAZKOV, G. N., ZHMUD', A. M., ZHULKOVSKIY, A. M., LAVROV, L. N.

"A Coaxial Circuit"

USSR Author's Certificate No 259201, filed 8 Jul 68, published 28 Apr 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2B211 P)

Translation: The Author's Certificate introduces a coaxial circuit which contains a lumped capacitance in the form of a hollow diaphragm with rigid and flexible walls located on the inner conductor at the first node of the voltage standing wave. To provide continuous tuning of the circuit, the rigid wall is fastened to a section of the inner conductor which passes through the shorted wall of the circuit and is movable in the axial direction, while the flexible wall of diaphragm type faces the open-circuit end of the tank and is fastened to the stationary section of the inner conductor.

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- 5 -

1/2 035 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--MAGNETIC FIELDS OF METEOR STREAMS AND THEIR ROLE IN COSMIC RAY
DIFFUSION -U-
AUTHOR--BELSKIY, S.A. *B*
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, ASTRONOMICHESKIY ZHURNAL, VOL. 47, NO. 1, 1970, PP.
201-205
DATE PUBLISHED-----70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, ATMOSPHERIC SCIENCES
TOPIC TAGS--COSMIC RAY, MAGNETIC FIELD, METEOR STREAM, MICROMETEORITE,
WAVE PROPAGATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0739 STEP NO--UR/0033/70/047/001/0201/0205
CIRC ACCESSION NO--AP0110463
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110463

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE BASIS OF AN EARLIER ESTIMATE OF THE POSSIBLE STRENGTH OF MAGNETIC FIELDS IN METEOR STREAMS FORMING AS A RESULT OF THE PASSAGE OF MICROMETEORS THROUGH INTERPLANETARY PLASMA (S. A. BEL'SKIY, GEOMAGNETIZM I AERONOMIYA, 8, 230, 1968; ASTRON. ZH., 46, 1969, 1330), IT IS POSTULATED THAT THE MAGNETIC FIELDS OF METEOR STREAMS CAN MAKE A SUBSTANTIAL CONTRIBUTION TO THE DIFFUSION OF COSMIC RAYS IN CIRCUMSOLAR SPACE. COMPARISON OF DATA IN THE LITERATURE ON THE CLOUD OF MAGNETIC INHOMOGENEITIES, FOLLOWING FROM EXPERIMENTAL DATA ON THE PROPAGATION OF SOLAR AND GALACTIC COSMIC RAYS. AND THE DISTRIBUTION OF THE ORBITAL PARAMETERS OF METEOR STREAMS REVEALS A CLOSE CORRESPONDENCE. FACILITY: PHYSICAL TECHNICAL INSTITUTE IMENI A. F. IOFFE.

UNCLASSIFIED

USSR

UDC: 621.5:681.325.65

BEL'SKIY, V. K., Engineer, and ZHOLKOV, YU. A. AND CHUDAKOV, A. D., Candidates of Technical Sciences

"Set of Fluidic Computer Devices"

Moscow, Priory i Sistemy Upravleniya, No. 5, 1970, pp 17-19.

Abstract: A set of fluidics computer devices has been developed at the State Scientific Research Institute for Heat Engineering Instrument Building. The devices are discrete, modular units containing no moving parts. They are designed for the performance of the main digital and logic operations involved in the input, processing, storage and output of discrete information. These standard devices are designed for the construction of various control and computation equipment; devices of this type have never been described in the literature either in the USSR or abroad and have not as yet been manufactured by industry. The devices are manufactured on plates which can be stacked into blocks designed to fit into modular plug-in units performing various control and computational operations. Operating speeds include five cycles of addition or subtraction per second, 15 comparison operations per second, 25 code conversion operations per

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USSR

BEL'SKIY, V. K., Engineer, and ZHOLKOV, YU. A. AND CHUDAKOV, A. D., Candidates of Technical Sciences, Moscow, Priory i Sistemy Upravleniya, No. 5, 1970, pp 17-19.

second, 20 cycles of instruction readout per second or 4 cycles of manual information input per second.

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USSR

UDC: 536.24:536.42

DANILOVA, G. N., BEL'SKIY, V. K., KUPRIYANOVA, A. V., BORISHANSKAYA, A. V.

"Motion-Picture Study of the Process of Boiling of Ammonia and Freon"

V sb. Teplo- i massoperenos. T. 2. Ch. 1 (Heat Transfer and Mass Transfer, Vol 2, Part 1--collection of works), Minsk, 1972, pp 132-140 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9B993)

Translation: Experiments were done with large-volume boiling on a horizontal stainless steel plate measuring 60×1.9 mm (in experiments with freon-12, -142, -113) and 62.5×2.6 mm (in experiments with ammonia). Heat fluxes were varied in the experiments from 2580 to $46\,300 \text{ W}\cdot\text{m}^{-2}$, pressure from 0.59 to 12.2 abs. at. Motion pictures were taken at a rate of 3600-4700 frames per second. The quantitative effect of pressure on the detachment diameter D_{0p} , the rate of detachment U , the product $D_{0p}U$ and the rate of growth of the bubbles at the instant of detachment $W_0'' = (dD/d\tau)_{\tau=\tau_{\max}}$ was determined. At atmospheric pressure, in view of the closeness of the characteristics of vaporization of freons, it is proposed that the values $D_{01} = 0.65$ mm and $U = 62$ Hz, $D_{01}U = 40$ mm/s should be assumed; for ammonia -- $D_{01} = 1.45$ mm. Computational expressions are proposed for

1/2

USSR

DANILOVA, G. N., et al., Teplo- i massoperenos. T. 2. Ch. 1, Minsk, 1972, pp 132-140

these characteristics, which decrease in magnitude as pressure is increased. On the basis of the law of corresponding states, a generalization is also proposed for calculating the detachment diameter of vapor bubbles of water, freon-12 and ammonia. The rate of growth of vapor bubbles (W_0) is satisfactorily described by the Labuntsov formula when $\beta = 6.75$ for ammonia and $\beta = 4.5 \pm 5$ for freon-12. Bibliography of 13 titles. Yu. Ye. Pokhvalov.

2/2

- 70 -

USSR

UDC: 539.2.01

ZORKHIY, P. M., BEL'SKIY, V. K.

"The Structure of Crystals Made up of Centrally Symmetric Molecules"

V sb. Sovrem. probl. fiz. khimii (Modern Problems of Physical Chemistry--collection of works), T. 4, Moscow, Moscow University, 1970, pp 379-406 (from RZh-Fizika, No 9, Sep 70, Abstract No 9Ye301)

Translation: In order to classify molecular structures with the aid of the method of potential functions, structural classes and subclasses are derived and the degree of probability of realizing them is evaluated for crystals made up of centrally symmetric molecules. The energy of interaction between individual pairs of molecules is computer-calculated for 21 materials, which operation made it possible to assign real crystal structures definitely belonging to one of the derived classes in 12 cases out of the 21. Additional data were required for the remaining 9 structures. It is shown that the given molecular structures are "island" structures. Bibliography of 21 titles. R. V. Baranova.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PACKING OF MOLECULES IN CRYSTALS OF ANTHRAQUINONE AND ITS
1,5,DIHALO DERIVATIVES -U-
AUTHOR-(04)-BELSKIY, V.K., CHETKINA, L.A., ZORKIY, P.M., GOLDER, G.A.
COUNTRY OF INFO--USSR
SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 262-7 *B*
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CRYSTAL, ANTHRAQUINONE, MOLECULAR INTERACTION, MOLECULAR
STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/1410 STEP NO--UR/0070/70/015/002/0262/0267
CIRC ACCESSION NO--AP0116857
UNCLASSIFIED

2/2 012


UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116857

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTERMOL. INTERACTION ENERGY WAS CALCD. BY USING THE ATOM ATOM APPROXN. (A. KITAIGORODSKII AND MIRSKAYA, 1961; ZORKII, ET AL., 1967), AND THESE VALUES WERE USED IN COMBINATION WITH AN ANAL. OF THE INTERMOL. CONTACTS TO COMPARE THE STRUCTURES OF ANTHRAQUINONE AND ITS 1,5-DIHALO DERIVS. THE INTRODUCTION OF EVER BIGGER SUBSTITUTING GROUPS INTO THE MOL. RESULTS IN A SMOOTH CHANGE IN THE STRUCTURE. IN THE 2 EXTREME CRYSTALS (ANTHRAQUINONE AND ITS I DERIV.), THERE IS A SIMILAR MOTIF FOR THE MOL. PACKING, WHICH DIFFERS FROM THE OTHER STRUCTURES. THE RESULTS SHOWS HOW THE GEOMETRIC CHARACTERISTICS OF THE MOL. AFFECT THE MOL. PACKING AND, CONSEQUENTLY, THE PHYS. PROPERTIES. FACILITY: NAUCH. ISSLED. FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CRYSTAL CHEMICAL ANALYSIS OF STRUCTURES FORMED FROM
CENTROSYMMETRICAL MOLECULES. II. STRUCTURAL SUBCLASS OF
AUTHOR--(02)-BELSKIY, V.K., ZORKIY, P.M.
COUNTRY OF INFO--USSR 
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 75-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--MOLECULAR STRUCTURE, CRYSTAL, BROMINATED ORGANIC COMPOUND,
BENZENE DERIVATIVE, ORGANOMERCURY COMPOUND, ANTHRAQUINONE, NAPHTHALENE,
ORGANIC NITRO COMPOUND, NITRILE, CALCULATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY KEEL/FRA--1995/1233 STEP NO--UR/0192/70/011/001/0075/0079
CIRC ACCESSION NO--AP0116695
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116695

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ATOM ATOM APPROXN., INTERACTION ENERGIES OF SEP. PAIRS OF MOLS. IN CRYSTALS OF TETRABROMOBENZENE, PH SUB2 HG, DICHLOROANTHRAQUINONE, DINITRONAPHTHALENE, AND MUCONONITRILE WERE CALCD. A SIMILAR CORRELATION OF THE OBTAINED VALUES ALLOWED THE STRUCTURES TO BE ATTRIBUTED TO THE SAME STRUCTURAL SUBCLASS. IN THESE STRUCTURES, MOL. CHAINS ARE PRESENT AND LAYERS ARE ABSENT. MOL. COORDINATION NOS. WERE DETD., AND A METHOD OF NOTATING THEM IS PROPOSED. FOR TETRABROMOBENZENE AND PH SUB2 HG, THE STRUCTURES BASED ON ENERGETICAL CALCNS. ARE COMPARED WITH PUBLISHED STRUCTURAL ANAL. RESULTS. FACILITY: MUSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--HEAT TRANSFER DURING BOILING OF FREON 12 ON A TUBE BUNDLE AND ON A
SINGLE JACKETED TUBE -U-
AUTHOR--BELSKIY V.K. **B**
COUNTRY OF INFO--USSR
SOURCE--KHOLOD. TEKH. 1970, 47(2), 40-4
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--FREON, HEAT TRANSFER COEFFICIENT, BOILING

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/0870 STEP NO--UR/0066/70/047/002/0040/0044
CIRC ACCESSION NO--AP0137898
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137898

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HEAT TRANSFER COEFF. WAS STUDIED AS A FUNCTION OF THE HEAT FLUX Q DURING THE BOILING OF FREON 12 AT NEGATIVE 25, 10, AND 40 DEGREES IN A 6 ROW HORIZONTAL TUBE BUNDLE (21 STAINLESS STEEL TUBES, 17.7 MM OUTSIDE DIAM., 17.1 MM INSIDE DIAM., 290MM LENGTH, AND RELATIVE PITCH 1.36). THE TUBES WERE ELEC. HEATED AND EACH HORIZONTAL ROW OF TUBES WAS EVALUATED SEP. AT Q SMALLER THAN 2500 W-M PRIME², THE HEAT TRANSFER COEFF. IS GREATER FOR THE BUNDLE THAN THAT OBSD. DURING THE BOILING OF FREON 12 ON A SINGLE TUBE BECAUSE OF CONVECTION, TURBULANCE INDUCED BY BUBBLES, AND SECONDARY VAPORIZATION WITHIN THE BUBBLES DURING CONTACT WITH SUPERHEATED LIQ., LAYER. EXPTS. CARRIED OUT WITH A SINGLE TUBE AT Q EQUALS 3000 W-M PRIME² AND BOILING TEMP. OF NEGATIVE 25, 10 AND 20 DEGREES REVEALED THAT JACKETING THE TUBE WITH A 0.3 MM THICK GLASS FABRIC INCREASED THE HEAT TRANSFER COEFF. BY A FACTOR OF 6.7, 7.8, AND 1.4, RESP. FACILITY: LENINGRAD. TEKHNOL. INST. KHOLOD. PROM., LENINGRAD, USSR.

UNCLASSIFIED

Recorders and Transducers

USSR:

UDC 621.397.621

BEL'SKIY, V. N., DAVIDENKO, S. N., MARKOVA, Yu. V., PILATOVSKIY,
A. I., SMIRNOV, A. Ye., and UAKIN, Ye. S.

"Mobile Magnetic Video Recording Station PVS-1"

Moscow, Tekhnika kino i televideniya, No. 6, 1971, pp 33-37

Abstract: The advantage of this mobile video recording station is that it enables personnel involved in TV programming not only to escape the confines of the studio but to transcend the line-of-sight limitations of the portable transmitter. The station was built by order of the State Committee of the Council of Ministers, USSR, for Television and Radio, in the VNIITR /expansion unknown/ and was completed in 1970. Short descriptions are given of the equipment complement, the functional system of the station, the video channel, the sound accompaniment, the recording of directors' comments, and other facilities the station affords. Diagrams are given of the equipment layout in this mobile recording studio, and of interconnections of the system blocks. Photographs of some of the equipment are also shown.

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Pesticides

USSR

UDC 542.938:547.26'118

NIKONOROV, K. V., GURYLEV, E. A., BEL'SKIY, V. Ye., and MAYOROVA, T. A.,
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov Academy
of Sciences USSR

"Kinetics and the Mechanism of Hydrolysis of Chlorophos and Some of Its
Analogues"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1925-1929

Abstract: The kinetics of aqueous hydrolysis of chlorophos and some of its
analogues were investigated. It was shown that the reaction occurs in two
directions, each of which exhibits several stages. A diagram for the
hydrolysis has been proposed. The overall constant of hydrolysis and the
constants of the reaction rates in both directions have been evaluated. It
has been shown that changes in the molecular structure had a definite ef-
fect on the rate and the direction of the hydrolysis.

1/1

USSR

UDC 541.124:541.67:547.1'118

RAYEVSKIY, O. A., BEL'SKIY, V. YE., ZVEREV, V. V.

"Evaluation of Effective Charges in Phosphoryl Compounds Based on Orbital Electronegativities"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2491-2494

Abstract: When discussing the intermolecular effects in complex organic molecules the concept of effective charges (δ) and the concept of the orbital electronegativity (χ) which is considered as the linear function of the charges on the atoms are used. The basis for the method of finding the charges in the molecule in the given paper is the principle of incomplete equilization of the electronegativities [J. F. Huheey, J. Organ. Chem., No 31, 2365, 1966]. The effective charges are found on P and O atoms of a number of symmetric phosphoryl compounds with the general formula R_3PO . In considering the nature of the phosphoryl bond, a formal path is selected with the assumption that the double bonded nature of the phosphoryl group is the result of overlap of the 3d-orbital of phosphorus and the 2p-orbital of oxygen. The charge distribution on phosphoryl group atoms in the R_3PO type compounds is tabulated. A linear relation was found between the charges on the phosphorus and oxygen atoms of $1/2$

USSR

RAYEVSKIY, O. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973, pp 2491-2494

the phosphoryl group calculated on the basis of the orbital electronegativity and the sum of the induction constants of the substitutions on the phosphorus atom.

2/2

USSR

UDC 541.67:543.422.4:547.1'118

SHAGIDULLIN, R. R., BEL'SKIY, V. YE., ASHRAFULLINA, L. KH., KUDRYAVTSEVA, L. A.,
IVANOV, B. YE.

"Study of Dipole-Dipole Interaction of Phosphoryl Compounds with the Environment by the Method of Infrared Spectroscopy"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973,
pp 2502-2504

Abstract: A study was made of the nature of the variation of the valence phosphoryl oscillation frequency $\nu_{P=O}$ in different media for phosphoryl compounds differing significantly with respect to dipole moments. The interaction with the environment of organophosphorus ethers, amides, acid chlorides and trialkyl (aryl) phosphine oxides having a phosphoryl group takes place by the same mechanism as the linearity of the variation of the valence oscillation frequency of the P=O bond under the effect of the environment indicates. The interaction of the phosphoryl compounds with the environment is intensified with an increase in their dipole moments which can be caused by an increase in the polarity of the P=O bond. The capacity of the phosphoryl compounds for interaction with the environment depends on the intramolecular effects of the substitutions on the phosphorus determined by the Taft induction constants.

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USSR

UDC 541.127+542.938+546.23

EEL'SKIY, V. YE., EEZZUBOVA, N. N., YEFREMOVA, M. V., and NURETDINOV, I. A.,
Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov Acad. Sc.
USSR

"Kinetics of Alkaline Hydrolysis of Some Selenophosphorusorganic Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1255-1257

Abstract: Reaction kinetics of the investigated compounds in aqueous alkaline solutions is of the first order both in regard to the substrate as well as the OH^- ions. This appears to be analogous to alkaline hydrolysis of other phosphorusorganic compounds in which the reaction occurs via the $\text{S}_{\text{N}}2$ mechanism at the phosphorus atom. Reactivity of selenophosphorusorganic compounds appears to be the same order reaction as that of the oxygen and sulfur analogues, if the selenium is in the P=Se group.

1/1

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USSR

UDC 543.878+547.26'118

BEL'SKIY, V. YE., KUDRYAVYSEVA, L. A., and IVANOV, B. YE., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzova, Academy of Sciences USSR

"Structure and Chemical Shift in the NMR Spectra of P^{31} of the Esters of Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2427-2431

Abstract: A study of the hydrolysis kinetics of substituted phosphonates having the general form $RP(O)OEt_2$ indicated a linear relationship between the size of δ_P and the logarithm of the constant of base hydrolysis velocity of these ethers. The δ_P also showed a linear relationship with the induction constant ω^* of the R radical in 37 compounds. However, the presence of π bonds or free electron pairs on the α -atom in the R radical allows for a $pd\pi$ interaction with the d orbitals of the phosphorus. The above linear relationships do not hold for such compounds and thus they were not included in the plot. the greatest $pd\pi$ interaction was observed for the $C \equiv C$, $C \equiv O$ and $P \equiv O$ groups.

1/1

USSR

UDC 547.26'118

PUDOVIK, A. N., PUDOVIK, M. A., TERENT'YEVA, S. A., and BEL'SKIY, V. Ye.,
Kazan' Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov,
USSR Academy of Sciences

"Reaction of 1,3,2-Oxaazaphospholanes With Alcohols and Mercaptans"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,407-2,413

Abstract: This is a continuation of an earlier study in which the authors demonstrated that 1,3,2-oxaazaphospholanes with a dialkylamino group at the phosphorus atom are readily subject to alcoholysis, with formation of the corresponding alkoxy derivatives; here the reaction of certain derivatives of the 1,3,2-oxaazaphospholanes with alcohols and mercaptans is studied. Derivatives tested were 2-ethoxy-4-methyl-N-methyl-1,3,2-oxaazaphospholane, 2-ethoxy-N-phenyl-1,3,2-oxaazaphospholane, 2-propoxy-1,3,2-oxaazaphospholanes, 2-chloro-N-phenyl-1,3,2-oxaazaphospholane, and 2-diethylamino-N-phenyl-1,3,2-oxaazaphospholane; reactants were ethyl and propyl alcohols, phenylaminoethanol, aliphatic mercaptans, propyl mercaptan and thiophenol. It was found that replacement of the alkyl group at the nitrogen atom of the phospholane ring with a phenyl group leads to definite stabilization of the
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USSR

PUDOVIK, A. N., et al., Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,407-2,413

ring; further, the above-indicated reactions with aliphatic mercaptans proceed with elimination of sulfur from the mercaptans and formation of the corresponding thion derivatives. The reaction with thiophenol produces thiophosphite; that with benzylmercaptan, both thiophosphite and dithiophosphate.

2/2

USSR

UDC 542.938:661.718.1

ANDREYEVA, L. S., ANDRIANOV, A. A., BEL'SKIY, V. YE., VAVILOVA, M. F.,
GURYLEV, E. A., and NIKONOROV, K. V., Institute of Organic and Physical
Chemistry imeni A Ye. Arbuzov, Academy of Sciences. U SSR

"Hydrolysis of Dimethyl-(1-acetoxy-2,2,2-trichloroethyl)phosphonate"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71,
pp 2336-2338

Abstract: Chloracetophos -- diemthyl-(1-acetoxy-2,2,2-trichloroethyl)
phosphonate -- is a fungistatic agent. It undergoes hydrolysis easily losing
its physiological activity. There are three possible routes for its hydro-
lysis, and it was established that all three occur simultaneously, the acetic
acid, hydrochloric acid, and methanol being formed in the process. The
hydrolysis is dependent on the temperature and pH -- it accelerates rapidly
with the increase of pH. The overall rate constants for the initial reaction
period were calculated to be 1.2×10^{-3} , 9.8×10^{-3} , and $4.9 \times 10^{-2} \text{ min}^{-1}$ at
50, 70 and 90° respectively.

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USSR

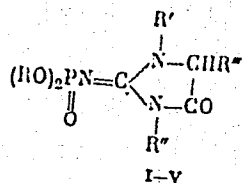
UDC 547.495+541.127+542.938

ALIMOV, M. P., ~~BEL'SKIY, V. YE.~~, and ALIMOV, P. I., Institute of Organic and Physical Chemistry imeni A. YE. Arbutov, Academy of Sciences USSR

"Hydrolysis of N-Phosphorylated Imidohydantoins"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1769-1791

Abstract: The article describes results of a study of the hydrolytic stability of some N-phosphorylated imidohydantoins of the general formula



- (I) R = R'' = Et, R' = R''' = H;
 (II) R = i-Pr, R'' = Et, R' = R''' = H;
 (III) R = R'' = R''' = Et, R' = H;
 (IV) R = R'' = R''' = Et, R' = H;
 (V) R = Et, R'' = Ph, R' = R''' = H.

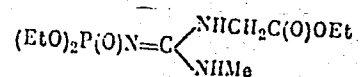
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USSR

ALIMOV, M. P., et al., Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71,
pp 1789-1791

For purposes of comparison, a kinetic study was also made of the hydrolysis,
under the comparable conditions, of substitute N-phosphorylated imidoures



It was found that the presence of the hydantoin ring at the C=N bond does
not significantly influence the bond breaking rate in alkaline hydrolysis.

2/2

USSR

UDC 541.127.3:542.938:547.26'118

BEL'SKIY, V. Ye., BEZZUBOVA, N. N., YELISEYENKOV, V. N., and PUDOVIK, A. N.,
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR
Academy of Sciences

"Kinetics of the Hydrolysis of Mixed Esters of Methylphosphonic Acid Which
Contain P-O-C and P-S-C Bonds"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2557-2560

Abstract: As a continuation of studies begun in 1969, the authors examined
the reactions between water and the OH^- ion, and a number of the derivatives
containing P-O-C and P-S-C bonds.

It was concluded from kinetic data that the reaction between water and the
mixed esters having the P-O-Alk and P-S-Alk groups includes breaking of the
C-O bond. Further, the effect of $p_\pi - d_\pi$ interaction between phosphorus
and thiol sulfur on reactivity is insignificant. The linear relationship
between the rate constants of hydrolysis for the mixed thiolphosphonates
and fluorides of phosphorus-containing acids of similar structure was
shown.
1/1

USSR

UDC 543.878 + 547.26'118

BEL'SKIY, V. YE. Institute of Organic and Physical Chemistry
Imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reactivity of Phosphoric Acid Triesters in Alkaline Hydrolysis"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No
11, Nov 70, pp 2595-2596

Abstract: In order to elucidate the influence of all three alcohol groups R, R' and R" in esters of the type $(RO) \cdot (R'O) \cdot (R''O)PO$ on the reaction rate, the authors studied available data on the alkaline hydrolysis of phosphoric acid triesters. The results indicate that differences in the alkaline hydrolysis rate are determined by the sum of the inductive effects of the alcohol groups. The influence of the eliminated group and the remaining groups is equal.

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USSR

UDC 541.124 + 661.718.1

BEL'SKIY, V. YE., and YEFREMOVA, M. V., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Inductive Effect and $p_{\pi}-d_{\pi}$ -Conjugation in Phosphorus Acid Esters"

Moscow, Izvestiya Akademii Nauk, Seriya Khimicheskaya, No 7, Jul 70, pp 1542-1547

Abstract: Hydrolysis kinetics of a series of alkyl substituted phosphonates was studied in an attempt at quantitative determination of the inductive effect and of the $p_{\pi}-d_{\pi}$ conjugation. The kinetics of alkaline and neutral water hydrolysis was studied in dilute aqueous solutions. In both reactions only one ester bond is broken. It was found that introduction of electronegative groups into alkyl radicals at the phosphorus atom facilitated the hydrolysis. A correlation analysis was performed on the experimental data and the contribution of the inductive effect and of the $p_{\pi}-d_{\pi}$ conjugation of the ethoxyl group at the phosphorus atom to the free energy of activation was determined. With a nucleophilic substituent at the phosphorus atom the contribution of both effects is about equal, while for reactions at the side chain the inductive effect is the principal contributor.

1/1

USSR

UDC 541.127 + 542.938 + 661.718.1

BEL'SKIY, V. YE., IVASYUK, N. V., POVARENKINA, S. V., SHERMERGORN, I. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Kinetics of the Hydrolysis of Bis-(chloromethyl)-thiophosphinic Acid"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1407-1409

Abstract: Aqueous and alkaline hydrolysis of bis-(chloromethyl)-thiophosphinic acid was studied in an attempt to elucidate the reaction mechanism. The hydrolysis was performed at 50-70°C. In the aqueous run the acid was titrated with KOH against the first appearance of phenolphthaline color. Analysis of kinetic data showed that the process occurs in two stages: first, one HCl molecule splits off rapidly, then another at a much slower rate; the first stage is a first order reaction. In alkaline hydrolysis HNO₃ was used for titration, the process occurring in one phase. In accordance with such kinetic rates the reaction mechanism con-
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USSR

BEL'SKIY, V. YE., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1407-1409

sists of a slow step in which the sulfur atom migrates from the phosphorus to a carbon atom of the chloromethyl group, followed by a rapid hydrolysis of the intermediate product. The first step occurs by an intramolecular S_N2 mechanism, and the rate of the second step is determined by the ionization of the mercapto group, which in alkaline medium occurs very rapidly.

2/2

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USSR

UDC 541.127+542.938+661.718.1

BEL'SKIY, V. YE., ANDREYEVA, L. S., ALEKSANDROVA, I. A.,
VINOKUROVA, G. M., Institute of Organic and Physical Chemistry
imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Kinetics of the Hydrolysis of Alkyl-bis-(γ -chloropropyl)-
phosphinates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6,
Jun 70, pp 1418-1419

Abstract: The kinetics of hydrolysis in water and sodium hydroxide solution of several bis-(γ -chloropropyl)-phosphinic acid esters was studied and compared with corresponding bis-(chloromethyl)-phosphinates. It was determined that the γ -chloropropyl compounds are hydrolyzed faster in water and much slower in alkaline medium in comparison to their chloromethyl counterparts. The ratio of rate constants for these esters decreases with an increase in the length and branching of the alcohol radical during alkaline hydrolysis, while the opposite is true for aqueous hydrolysis. This phenomenon agrees with the assumption that the chlorine in the γ -position catalyzes intramolecularly the reaction with water.
1/1

USSR

UDC 541.127.3:542.938:547.26'118

BEI'SKIY, V. Ye., BEZZUBOVA, N. N., AKAMIN, V. D., YELISEYENKOV, V. N.,
RIZPOLOZHENSKIY, N. I., and PUDOVIK, A. N., Corresponding Member of the
USSR Academy of Sciences

"Reactivity of Phosphonic Acid Esters and Their Thio-Analogs in Alkaline
Hydrolysis"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 85-87

Abstract: Nucleophilic substitution on the phosphorous atom decreases on replacement of the phosphoryl oxygen by sulfur. This was established as a result of studying the kinetics of hydrolysis of various esters and acid chlorides of phosphoryl oxygen. However, it still remained unclear whether the reaction rate changed to an equal extent on replacement of the P=O by P=S for a series of compounds with close structure. This paper contains a study of the kinetics of alkaline hydrolysis of some esters and thio esters of substituted phosphonic and thiophosphonic acids. The data obtained permits the conclusion to be drawn that the change in reactivity on converting from phosphoryl to thio-phosphoryl compounds essentially depends on the nature of the substitutions on the phosphorus, and a decrease in the reaction rate constant does not

1/2

USSR

BEL'SKIY, V. Ye., et al., Doklady Akademii Nauk SSSR, Vol 197, No 1, March-April 1971, pp 85-87

always occur. The mechanism of this effect is discussed, the experimental procedure is presented, and tables of values are given for the activation energy E and the pre-exponential factor A in the equation $K = A \exp (-E/RT)$ for the reaction with OH^- -ion, and the hydrolysis rate constants of KOH .

A definite tendency toward an increase in absolute magnitude of the pre-exponential factor is noted on the replacement of oxygen atoms by sulfur in phosphonates. If it is considered that nucleophilic substitution on the phosphorus requires the formation of a pd -bond in the activated complex, the increase in the pre-exponential factor indicates high availability of the d -orbitals of phosphorus in the thio-derivatives for nucleophilic attack.

2/2

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USSR

UDC: 541.128.546.13

B
BEL'SKIY, V.YE., YEFREMOVA, M.V., YELISEYENKOV, V.N., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Intramolecular Catalysis by Chlorine in Hydrolysis of Phosphinates and Phosphonates"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Khimicheskaya, No 3, Mar 70, pp 561-564

Abstract: The authors investigated the kinetics of reactions with water and hydroxyl anions for esters of chloroalkylphosphonic and bis(chloroalkyl)phosphinic acids with various positions of the chlorine atom in the molecule. For esters which have the chlorine atom in the γ -position, an unusual increase in the rate of hydrolysis takes place which may be attributed to the intramolecular effect of the chlorine on the reaction center. The rate of hydrolysis in water can be described by an equation for first-order reactions. The rate constants k were determined from a graphic relationship corresponding to the equation

$$-\log C = 0.434kt + \text{const},$$

where C is the ester concentration. The rate constant for alkaline hydrolysis k_2 was determined from the slope of straight lines corresponding to an equation for second-order reactions

$1/2$

USSR

BEL'SKIY, V.YE., et al, Izvestiya Akademii Nauk SSSR: Seriya Khimicheskaya, No 3, Mar 70, pp 561-564

$$\frac{2.3}{C_0 - (C_{OH^-})_0} \log \frac{C}{C_{OH^-}} = k_2 t + \text{Const},$$

where C_0 and $(C_{OH^-})_0$ are the initial concentrations, while C and C_{OH^-} are the instantaneous concentrations of ester and hydroxyl ions. The difference between the behavior of the esters in reactions with water and their behavior in the case of hydroxyl anions is apparently due to a change in the reaction center. The effect of chlorine on the reaction center during intramolecular catalysis is discussed. The authors thank I.A. ALEKSANDROVA for furnishing the γ -chloro-propylphosphonic acid ester specimens.

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B
BEL'SKIY, V.YE., MOTYGULLIN, G.Z., YELISEYENKOV, V.N., RIZPOLOZHENSKIY, N.I.,
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"Hydrolysis of Phosphorus Acid Esters Which Contain the P-H Bond"

Moscow, Izvestiya Akademii Nauk SSSR: Seriya Khimicheskaya, No 3, Mar 70, pp 565-
568

Abstract: Continuing their investigation of the kinetics of hydrolysis of phosphorus acid esters containing the P-H bond, the authors studied hydrolysis of a number of alkyl esters of ethylphosphinous acid of the general formula $(RO)_2C_2H_5P(O)H$ in water at different temperatures. It was found that the rate constants for hydrolysis decrease with an increase in length and branching of the alkyl radicals. Exceptions to this rule are sec.- and tert.-butyl esters which have a higher rate of hydrolysis due to S_N1 splitting at the carbon atom in the alcohol group. It is probable that the P-O bond is broken in the other esters by a mechanism analogous to that observed in dialkylphosphites.

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TITLE—HYDROLYSIS OF PHOSPHONOUS AND PHOSPHINOUS ACID ESTERS CONTAINING A
PHOSPHORUS HYDROGEN BOND —U—
AUTHOR—(04)—BELSKIY, V.YE., MOTYGULLIN, G.Z., YELISEYENKOV, V.N.,
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING ETP(10)(OR)H, PREPD. CONVENTIONALLY, WERE USED (R SHOWN): MEETCH, B SUB12 80-10DEGREES, D PRIME20 0.9865, N PRIME20 SUBD 1.4274; CL CH SUB2 CH SUB2, B SUB0.2 65-6DEGREES, 1.2183, 1.4578; AND ME SUB3C, B SUB0.1 35DEGREES 0.9977, 1.4328. THE LAIT WAS RATHER UNSTABLE AND DECOMP. ON STORAGE, EVEN IN A SEALED BULB, WITH LOSS OF ME SUB2C:CH SUB2. THE FOLLOWING VALUES OF AQ. HYDROLYSIS RATE CONSTS. (K TIMES 10 PRIME6 SEC PRIME1 NEGATIVE) (AT 98, 90, 80, AND 70DEGREES, RESP.), ACTIVATION ENERGY (KCAL-MOLE) AND DELTA S PRIME PLUS OR MINUS (E.U.) WERE REPORTED, RESP., FOR. SHOWN ON MICROFICHE. RATE CONSTS. FOR ALK. HYDROLYSIS FOR THE TERT BU ESTER WERE: (K NA 1 MOLE SEC.) 0DEGREES 0.045, 10DEGREES, 0.102, 20DEGREES 0.19, 30DEGREES 0.35, ACTIVATION ENERGY 11.2 AND DELTA S 25 E.U. ALTHOUGH GENERALLY THE AQ. HYDROLYSIS RATE CONSTS. DECREASED WITH INCREASING CHAIN LENGTH AND BRANCHING, THE ESTERS WITH MEETCH AND ME SUB3 C GROUPS WERE GREATLY REACTIVE, OWING TO AN SN 1 MECHANISTIC CHANGE IN THE MECHANISM AT THE C ATOM OF THE ALC. GROUP. FOR OTHER ESTERS CLEAVAGE AT THE P O LINK IS LIKELY, AS IN DIALKYL PHOSPHITES. FACILITY: INST. ORG. FIZ. KHIM. IM. ARBUZOVA, KAZAN, USSR.

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TITLE--INTRAMOLECULAR CATALYSIS BY CHLORINE IN THE HYDROLYSIS OF
PHOSPHINATES AND PHOSPHONATES -U-

AUTHOR--(03)-BELSKIY, V.YE., YEFREMOVA, M.V., YELISEYENKOV, V.N.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING VALUES OF RATE CONSTS. WERE REPORTED FOR AQ. HYDROLYSIS OF INDICATED ESTERS (IN K TIMES 10 PRIME6 SEC PRIME NEGATIVE1): (SHOWN ON MICROFICHE). SINCE THE 3,CL SUBSTITUENT GREATLY INCREASES THE RATE OF AQ. HYDROLYSIS, A FORM OF INTRAMOL. EFFECT OF CL IN THIS POSITION APPEARS TO EXIST. THE DIFFERENT BEHAVIOR OF ESTERS IN REACTIONS WITH H SUB2 O AND HO PRIME NEGATIVE IS EXPLAINED BY DIFFERENT REACTION CENTERS. THE CALCD. ACTIVATION ENERGIES FOR THESE REACTIONS ARE NOT ANY LOWER FOR ESTERS IN WHICH THE INTRAMOL. "CATALYSIS" EXISTS THAN FOR THOSE IN WHICH IT IS ABSENT. HENCE, THE ACCELERATION IS DUE TO INCREASED SIZE FO THE PRE EXPONENTIAL COEFF. CAUSED BY CHANGE IN POLARIZABILITY OF THE TRANSITION STATE.

FACILITY: INST. ORG. FIZ. KHIM. IM. ARBUZOVA, KAZAN, USSR.

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BEL'SKIY, Ye. I.

JPRS 55807

26 April 1972

NEW INDUSTRIAL MATERIALS

Excerpts from Russian-language book by Ye. I. Bel'skiy, et al.: *Novyye Materialy v Tekhnike*, 1971, signed copy given 18 May 1971, Minsk, Belarus, Publishing House, pp 3-55, 114-146, 249-265, 269-271.

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BEL'SKIY, Ye. I., DMITROVICH, A. M., LOZHECHNIKOV, Ye. B.

"New Materials in Technology"

Novye Materialy v Tekhnike [English version above], Minsk, Belarus' Press, 1971, 272 pages.

Translation of Annotation: This book presents a description of new materials, increasingly used in the production of industrial products. The basic physical, mechanical and technological properties of high-alloy steels and alloys, rare metals, high-purity materials, polymer, silicates, metal ceramic and mineral ceramic materials are presented.

The book is designed for engineering and technical workers in machine building plants and enterprises in other branches of industry.

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PROSTATITIS —U-
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