Organometallic Compounds

USSR

UDC 539.193:547.242

KONDRAT'YEVA, O. I., TROITSKAYA, A. D., CHADAYEVA, N. A., CHUYKOVA, A. I.,
USACHEVA, G. M., and IVANTSOV, A. Ye., Kazan' Chemical Technological
Institute Imeni S. M. Kirov and Kazan' Institute of Organic and Physical
Chemistry Imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Investigation of the Complex Compounds of Chromium (I) With Organic
Derivatives of Arsenic by the EPR Method"

Abstract: Eight new complex compounds of chromium (I) with organic derivatives
of arsenic (III) were obtained in acetone solution. The reaction occurred
instantaneously at room temperature with a slight excess of the arsenic com-
ponent. It was found that changes even in remote areas surrounding arsenic
had a definite effect on the characteristics of the chromium(I)-arsenic(III)
bond, which could be due to a possible decrease of the participation of S
electrons in formation of sp^n-hybrid orbitals.

1/1

Steels

USSR   UDC 621.785:65.096.5

IVANTSOV, G. I., SHTREMT, M. S., CHUKIN, V. V., and KASHIN, YU. A., Magnitogorsk
Mining and Metallurgy Institute imeni G. I. Nosov

"New Quenching Medium"

Moscow, Metallovedeniye, No 5, May 70, pp 54-57

Abstract: To prevent cracking and distortion of steel parts, the quenching medium
must have a controlled cooling rate. A medium is proposed which used solid par-
ticles and water with air being forced through the porous material as bubbles into
a cylinder filled with water and the solid particles. This places the solid par-
ticles in a suspended state of high agitation. A small amount of a flotation
agent may be added if necessary. In this work aluminum filings, granulated cinders
(1.5-2.0 mm mesh), glass marbles (1.5 mm diameter), and flotation additives--pine
oil or propylene oxide and butanol (OPSB) in quantities of 0.01 g/l--were used.
Upon adding the flotation agent and turning on the air flow, three layers were
formed in the cooling medium column: top layer--a froth; middle layer--air-water
mixture with a small concentration of rapidly moving particles; and the bottom
layer--water-air mixture with a high concentration of slow-moving particles. The
cooling rate can be regulated by changing the ratios of solid particles and water
and by altering the air flow. The particle-to-water ratios used were 1/10 and 1/5,
and the air flow varied from 0.3 to 0.5 l/cm^2-min.
1/2

- USSR

IVANTSOV, G. I., et al., Metallovedeniye, No 5, May 70, pp 54-57

    Bolts and spikes made from 40 Kh steel were heated to 840-860°C and quenched in oil, followed by tempering. The spikes were tempered at 240-280°C to a hardness of 44-56 (Rockwell C) and subjected to a bend angle of 15° without fracture. The bolts were tempered at 500° C to a Brinell hardness of 269-388 with a tensile strength of 120 kg/mm^2 minimum.

    Tests showed that 10 bolts were quenched to 20°C in stirred water and that four of them had cracks. Ten bolts oil quenched to 40°C had no cracks. Of ten bolts quenched in the above-described quenching medium with a 1/10 ratio, one showed cracks; 50 bolts quenched in the medium with a 1/5 ratio and the OPSB flotation agent showed no cracks. The bolts had a uniform corbite structure and a tensile strength of 125-135 kg/mm^2.

    Quenching the spikes in the new medium resulted in a higher and more uniform hardness and a larger bend angle before fracture (60-100°) than when spikes were quenched in oil.

2/2

USSR   UDC 632.954

IVANTSOV, N. K., TSKhA [Timiryazev Agricultural Academy]

"Aftereffect of the Herbicides Applied on Corn on the Crop of Later Cultures
(Barley and Millet)"

Abstract: The effect of herbicides applied on corn during planting on barley
(Kazan 6/4 brand) and millet (Veselopodolanskoye 38 brand) planted in fol-
lowing years was studied. Following herbicides were investigated: atrazine
and prometrin applied separately and concurrently prior to the appearance of
corn shoots amine salt of 2,4-D alone, and in combination with atrazine, and
tordon 101 applied when 3-5 corn leaves had developed. It was determined
that the most effective agent against the annual and perennial weeds was a
mixture of 4 kg/ha of atrazine with 1.2 kg/ha of the amine salt of 2,4-D.
Barley was found to be most sensitive to the aftereffect of atrazine and
tordone 101, millet being resistant to the action of these herbicides. Except
for tordon 101, the herbicides did not affect chemically the grain of barley
and millet.

1/1

1/2   016   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--CONSTRUCTION OF LARGE DIAMETER PIPELINES BY AUTONOMOUS PIPELINE
  LAYING TRAINS IN TRENCHES FORMED BY EXPLOSION -U-
AUTHOR--IVANTSOV, O.M.

COUNTRY OF INFO--USSR, UNITED STATES

SOURCE--MOSCOW, STROITEL'STVO TRUBOPROVODOV, NO 2, FEB 70, PP 11-13

DATE PUBLISHED----FEB70

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

TOPIC TAGS--GENERAL CONSTRUCTION, PIPELINE TRANSPORTATION SYSTEM,
  EXPLOSIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0383   STEP NO--UR/0095/70/000/002/0011/0013

CIRC ACCESSION NO--AP0119333
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0119333
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. A NEW METHOD OF CONSTRUCTION OF
  LARGE DIAMETER (2,500MM) TRANSMISSION PIPELINES IN TRENCHES FORMED BY
  EXPLOSION, UNDER NORTHERN CONDITIONS, IN AREAS COMPRISING SWAMPS AND
  PERMAFROST, IS DESCRIBED. THIS METHOD WAS DESIGNED AND DEVELOPED
  JOINTLY BY THE ALL UNION SCIENTIFIC RESEARCH INSTITUTE FOR THE
  CONSTRUCTION OF TRUNK PIPELINES (VNIIST) AND SOYUZGAZSPETSSTROY TRUST.
  IT CONSISTS IN DIGGING TRENCHES BY EXPLOSION, USING STRETCHED CORD
  CHARGES, AS WELL AS CONCENTRATED AND SLIT CHARTES. A FORMULA FOR
  DETERMINING THE WEIGHT OF THE CHARGE IS GIVEN. SCHEMATIC DRAWINGS OF
  CHARGE DISPOSITION, AND THE RESULTING AND PROJECTED TRENCHES IS
  PRESENTED. PIPELINES, ON DRY SECTIONS OF THE ROUTE, ARE BEING LAID IN
  TRENCHES BY UNIVERSAL ALL TERRAIN AUTONOMOUS MULTIPLE UNIT TRAINS,
  EQUIPPED WITH ELECTRICALLY SELF PROPELLED WHEELS. WHILE IN SWAMPY AND
  FLOODED AREAS WHERE TRENCHES ARE FILLED WITH WATER, AFTER THEIR
  FORMATION, THE PIPES ARE WELDED ON DRY AREAS ADJACENT TO SWAMPS, THEN
  LOWERED INTO THE WATER AND ANCHORED TO THE BOTTOM BY A SPECIALLY
  DESIGNED FLOATING EQUIPMENT. THE PIPE LAYING IN CHANNELS AND TRENCHES
  FORMED BY EXPLOSION EXCLUDES A SERIES OF OPERATIONS WHICH ARE NECESSARY
  FOR COVENTIONAL PIPELINE CONSTRUCTION. THE ADVANTAGES OF THIS METHOD
  ARE OUTLINED. THE ARTICLE CONTAINS A BRIEF SURVEY OF HIGH CAPACITY
  AUTONOMOUS MEANS OF TRANSPORTATION IN USSR AND IN USA USING ELECTRICAL
  TRANSMISSION. PHOTOGRAPHS OF THE MULTIPLE UNIT MOTOR TRAIN "OVERLAND"
  (USA) AND OF SELF PROPELLED WHEEL ARE INCLUDED. ORIG. ART. HAS: 5
  FIGURES.

UNCLASSIFIED

Microelectronics

CHERNOV, I. V., IVANTSOV, V. P.

"Evaluating the Packing Density of the Elements in Monolithic Integrated
Circuits"

Abstract: Geometric criteria for the packing of elements of monolithic
integrated circuits are analyzed. A coefficient equal to the product of
three coefficients is introduced for the packing density of the integrated
circuit. Computational formulas are presented for the coefficients.
One figure, bibliography of three titles.

1/1

2

USSR

UDC: 621.643.002.2 + 411.4

ZERNOV, A. V., ZAV'YALOV, V. E., INDYUKOV, A. F.,
IVANTSOV, V. YA., Ural NITI, Chelyabinsk; and
SHCHEPKIN, E. V., MITROSHIN, S. S., Nefteprovodmontazh
Trust, Ufa.

"Possibility of Automatic Double Welds of the Elbow Joints in
Large Diameter Pipelines"

Abstract: The Ural Pipe Industry Research Institute developed a
method for producing automatic double-V welds under flux with an
overhanging welding head in plates of 6-12 mm thickness with
2-2.5 mm gap.

1/1

USSR

ZERNOV, A. V., et al., Stroitel'stvo Truboprovodov, No 8, Aug 71, pp 15-17

With this method the welding arc is stabilized by a magnetic field created by a solenoid concentric with the electrode. The solenoid winding is in series with the welding circuit. The magnetic field is controlled by varying the distance of the solenoid from the weld.

This method makes it possible to make the initial root weld either from inside or from outside in the elbow joint of a pipe.

Analysis of weld sections showed that the quality of the welds is adequate. The subject solenoids can be installed on existing welding heads. This will result in increased productivity and quality.

1/2

Thermomechanical Treatment

USSR

UDC 621.789-977:669.15-194.2

PRIDANTSEV, M. V., and IVANTSOVA, E. I.

"Optimal Degree of Deformation of Austenite During High-Temperature Thermomechanical Working of Low-Alloyed Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 9, 1970, pp 64-66

Abstract: The dependence of the optimal degree of deformation during high-temperature thermomechanical treatment of chrome-manganese-silicon steel on carbon content was determined on four melts of type 30KhGSA steel containing 0.29, 0.39, 0.48, and 0.58% carbon. Deformation by rolling was 30, 60, and 90%. The billets were austenitized at 1000°C, and hardened after deformation from 900°C. The mechanical properties were determined in specimens tempered at 200°C for one hour. The optimal degree of deformation was found to decrease with increasing carbon content in the steel. The dependence of ε_{opt} on carbon content allows the optimal degree of deformation of austenite to be determined for chromansil steel of any composition. A figure is presented illustrating the dependence of optimal degree of deformation on carbon content.

1/1

USSR

UDC 666.764.001.4

GUZMAN, I. Ya., IVANTSOVA, L. A.., and MOISEYTSEVA, Z. K., Moscow Institute of Chemical Technology imeni D. I. Mendeleyev

"Production and Properties of Refractories Made From Magnesium Oxide on Nitride and Complex Bonds"

Abstract: Composite materials based on grains of fused magnesium oxide combined with silicon nitride, silicon oxynitride, and a complex bond consisting of forsterite, silicon carbide, and silicon nitride were produced by reaction caking. The composite and some of its properties are investigated. In comparison with grained refractories based on magnesium oxide, the composite materials possess lower porosity, higher strength, and higher thermal stability. The composite material also has good dielectric properties at increased temperatures. This material can be used at temperatures up to 1500°C in presence of thermal shocks. Three figures, 2 tables, 11 bibliographic references.

1/1

USSR

UDC 519.24

LADOKHIN, V. I., KORCHIKOV, A. V., NEZHMETDINOV, T. K., PANKOVETS, V. V.,
IVANYCHEV, Yu. N.

"Experimental Determination of the Correlation Function of Processes of Changing
Intensity in Adaptive Information Processing Systems"

Priyem i Obrabotka Inform. v Slozhn. Inform. Sistemakh [Reception and Processing
of Information in Complex Information Systems -- Collection of Works], No 2,
Kazan', Kazan University Press, 1970, pp 141-146, (Translated from Referativnyy
Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V202 by Yu. Shevchenko).

Translation: The problem of determination of the sampling estimate of the cor-
relation function in adaptive information processing systems (ADIPS) on the
basis of observation data is studied. The Cauchy-Bunyakovskiy inequality is
used to write an upper estimate for the dispersion of the estimate of the correla-
tion function. In conclusion, the authors present examples of practical problems
which can be solved using the results they produce.

    Abstractor's Note. The replacement of the actual processes occurring in
ADIPS with stable Gaussian processes in this work requires foundation.

1/1   -- 27 --

USSR

UDC 519.24

LADOKHIN, V. I., KOBCHIKOV, A. V., NEZHMETDINOV, T. K., PANKOVETS, V. V.,
IVANYCHEV, Yu. N.

"Experimental Determination of the Correlation Function of Processes of Changing
Intensity in Adaptive Information Processing Systems"

Translation: The problem of determination of the sampling estimate of the cor-
relation function in adaptive information processing systems (ADIPS) on the
basis of observation data is studied. The Cauchy-Bunyakovskiy inequality is
used to write an upper estimate for the dispersion of the estimate of the correla-
tion function. In conclusion, the authors present examples of practical problems
which can be solved using the results they produce.
    Abstractors Note. The replacement of the actual processes occurring in
ADIPS with stable Gaussian processes in this work requires foundation.

91956s   Comparison of the results of determination of the
color of petroleum products on KN-51 and FEKN-56 instruments.
Butrim, S. N.; Glebova, A. P.; Ivanvuk, G. E.; Musiyaka,
V. V.; Rogozhkin, P. A. (Volgograd Filal SKB ANN, Volgo-
grad, USSR). Khim. Tekhnol. Topl. Masel 1970, 15(1), 57–8
(Russ). The precision obtained with the app. FEKN-56 was 5
times as great as that of KN-51 when detg. the color of refined
oil. The relation between the results obtained with the 2 app.
was expressed by the linear equation $y = 5.6 + 0.15x$, where x
is the result obtained with the app. FEKN-56 and y that with the
app. KN-51. The reproducibility errors for the 2 app. are
tabulated. The equation is graphically presented.   GGJR .

REEL/FRAME
19790906

TITLE--DECALCIFICATION OF POLYOLEFINS -U-

AUTHOR-(05)-IVANYUKOV, D.V., KRYMOV, P.V., KUDRYAVTSEV, V.B., LYAKUMOVICH,
   A.G., BOBOK, N.S.
COUNTRY OF INFO--USSR

SOURCE--USSR 263,141
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DECALCIFICATION, ALKENE, CATALYTIC POLYMERIZATION, CHEMICAL
   PATENT, SURFACE ACTIVE AGENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1474   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128873
                    UNCLASSIFIED

CIRC ACCESSION NO--AA0128873

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POLYOLEFINS PREPD. ON ZIEGLER
  NATTA CATALYSTS WERE DECALCIFIED BY BEING WASHED WITH HOT SOFT WATER
  CONTG. DISSOLVED SURFACTANTS, SUCH AS K OR NA SALTS OF STIROMAL. A
  SOLN. OF THESE SALTS WAS PASSED THROUGH AN A. C. OR D. C.
  ELECTROMAGNETIC FIELD BEFORE IT WAS USED IN THE WASHING PROCESS.

UNCLASSIFIED

1/2   041   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--PREPARATION OF GASOLINE WITH AN OCTANE NUMBER OF 95 IN AN
   INDUSTRIAL CATALYTIC REFORMING PLANT -U-
AUTHOR--IVANYUKOV, D.V., KAMINSKIY, E.F., MASLYANSKIY, G.N., FEDOROV,
   A.P., SHAPIRO, R.N.
COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 1-5

DATE PUBLISHED-------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--GASOLINE, FUEL OCTANE RATING, CATALYTIC CRACKING, ALUMINUM
   OXIDE, OXIDE CATALYST, PLATINUM CATALYST, HIGH PRESSURE EFFECT, CHEMICAL
   REACTION RATE, CHLORINE, PETROLEUM CATALYTIC REFORMING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/2042   STEP NO--UR/0065/70/015/003/0001/0005

CIRC ACCESSION NO--AP0109974
ZZZZZZZZZZZZ   UNCLASSIFIED

CIRC ACCESSION NO--AP0109974
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE PROCESS AND THE PLANT WERE
  MODERNIZED BY USING PT-AL SUB2 O SUB3 CATALYST PROMOTED WITH CL INSTEAD
  OF F, WHOSE ACTIVITY WAS MAINTAINED BY ADDN. OF OPG. CL COMPOS. IN THE
  REACTION ZONE. A GREATER AROMATIZATION OF THE PARAFFINIC STOCK WAS
  REACHED AS THE AMT. OF H SUB2 O IN THE REACTION ZONE WAS REDUCED BY
  EVAPG. THE WATER FROM THE HYDROFINED GASOLINE STOCK AND DRYING THE
  RECYCLE GASES WITH MOL. SIEVES. A PRESSURE DECREASE TO 20 ATM INCREASED
  THE YIELD OF GASOLINE WITH RESEARCH OCTANE NO. 95. A 3RD STAGE REACTOR
  WAS ADDED, DISTRIBUTING THE CATALYST IN THE QUANT. RATIO 1:2:4 IN THE 3
  REACTORS, RESP.

ZZZZZZZZZZZZZ   UNCLASSIFIED

TITLE--OXIDATIVE REGENERATION OF A PLATINUM REFORMING CATALYST -U-

AUTHOR-(05)-MASLYANSKIY, G.N., IVANYUKOV, D.V., KAMINSKIY, E.F., FEDOROV,
   A.P., SHIPIKIN, V.V.
COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3) 5-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYST REGENERATION, PLATINUM, HYDROCARBON
   COMBUSTION/(U)AP54 CATALYST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1492   STEP NO--UR/0065/70/015/003/0015/0006

CIRC ACCESSION NO--AP0112450
                     UNCLASSIFIED

CIRC ACCESSION NO--AP0112486
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO MINIMIZE THE LOSS OF CL IN
PT-AL SU_2 O $SUB3$ CATALYST AP64 PROMOTED WITH CL, THE SYSTEM WAS
EVACUATED TO 50-60 MM BEFORE REGENERATION. DURING REGENERATION, H $SUB2$
O FORMED WAS REMOVED FROM THE CIRCULATING GASES. THE DURATION OF THE
1ST REGENERATION STEP OF HYDROCARBON COMBUSTION WAS GREATLY REDUCED.
THE AMT. OF H $SUB2$ O FORMED DURING REGENERATION WAS THUS DECREASED.

UNCLASSIFIED

1/2   026   UNCLASSIFIED   PROCESSING DATE--13SEP70
TITLE--PREPARATION OF BLOCK COPOLYMERS OF PROPYLENE AND APHYA OLEFINS -U-

AUTHOR-(05)-YAKOBSON, F.I., AMERIK, V.V., PETROVA, V.F., SHTEYNBAK, V.SH.,
    IVANYUKOV, D.V.
COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (3), 11-13

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--COPOLYMER, PROPYLENE, CATALYTIC POLYMERIZATION, TITANIUM
    CHLORIDE, INTRINSIC VISCOSITY, ETHYLENE, ISOBUTENE, STYRENE,
    CYCLOHEXANE, FREEZING, IMPACT STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0259   STEP NO--UR/0191/70/000/003/0011/0013

CIRC ACCESSION NO--AP0102309
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0102309
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF REACTION
CONDITIONS (TIME (5 MIN,5 HR), CONCN. OF MONOMER AND TICL SUB3, MACRO
CHAINS IN POLYMN. OF PROPYLENE (II) (MIXED WITH PROPANE) CATALYZED BY
4:1 ET SUB2 ALCL AND TICL SUB3 MIXTS. WAS STUDIED. MOL. WTS., CALCD.
FROM POLYMER INTRINSIC VISCOSITY DETNS. IN DECALIN, INCREASED ABRUPTLY
WITH REACTION TIME AND TEMP. WHETHER MONOMER CONCN. WAS DECREASING OR
CONST. INCREASING TICL SUB3 CONCN. (0.4 TO 3.5 TIMES 10 PRIME NEGATIVE2
MOLE-1.) DID NOT INFLUENCE CHAIN VIABILITY, BUT DECREASED INTRINSIC
VISCOSITY, PROBABLY DUE TO INCREASED NOS. OF ACTIVE CENTERS. THE LINEAR
DEPENDENCE OF POLYMER YIELD ON MOL. WT. AT DIFFERENT REACTION TIMES AND
TICL SUB3 CONCNS., EXCLUDING INITIAL NON STEADY STATE REGIONS, INDICATED
FREEDOM FROM MOL. CHAIN TERMINAION AND AFFIRMED THE EXISTENCE OF LIVING
MACROMOLS. IN THE SYSTEM. SUCCESSIVE POLYMN. OF II WITH ETHYLENE (0.13
TO 1PERCENT), ISOBUTYLENE (III) (4 TO 4.8PERCENT), VINYLCYCLOHEXANE, AND
STYRENE (1 TO 1.2PERCENT) AND III (3 TO 4.1PERCENT) GAVE BLOCK
COPOLYMERS HAVING RESISTANCE TO FREEZING IMPACT STRENGTH 2 TO 4 AND 2
TO 3 TIMES, RESP., GREATER THAN THOSE OF I.

Magnesium

USSR   UDC 669.721

OLYUNIN, G. V., MUZHZHAVLEV, K. D., IVANYUSHKINA, L. A.,   and
YUZHANINOVA, T. P.

"Thermal Balance of Powerful Diaphragm-Type Magnesium Electrolyzer
With Top Mounting of Anodes"

Tsvetnyye Metally, No 3, Mar 71, pp 62-64

Abstract: In order to determine the degree of utilization of
power and the nature of thermal losses in magnesium electroly-
zers of different capacities with identical design, the thermal
balance of an electrolyzer was measured. Recommendations are
given to decrease heat losses and increase the efficiency of
the electrolyzer. The most important means of decreasing the
heat losses and increasing efficiency is said to be decreasing
the quantity of gas exhausted at the cathode, plus reduction
of losses from the anode heads and through the top cover, in-
creasing the removal of magnesium from the electrolyzer without
increasing the heat losses.

1/1

Magnesium

OLYUNIN, G. V., MUZHZHAVLEV, K. D., IVANYUSHKINA, L. A., and
YUZHANINOVA, T. P.

"Thermal Balance of Powerful Diaphragm-Type Magnesium Electrolyzer
With Top Mounting of Anodes"

Abstract: In order to determine the degree of utilization of
power and the nature of thermal losses in magnesium electroly-
zers of different capacities with identical design, the thermal
balance of an electrolyzer was measured. Recommendations are
given to decrease heat losses and increase the efficiency of
the electrolyzer. The most important means of decreasing the
heat losses and increasing efficiency is said to be decreasing
the quantity of gas exhausted at the cathode, plus reduction
of losses from the anode heads and through the top cover, in-
creasing the removal of magnesium from the electrolyzer without
increasing the heat losses.

1/1

1/2   011   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MECHANISM OF ACTION AND THE EFFECTIVENESS OF INTRAVENOUS
    ADMINISTRATION OF TUBAZID, STREPTOMYCIN AND PARA AMINOSALICYLIC ACID IN
AUTHOR-(03)-PILIPCHUK, N.S., IVANYUTA, O.M., KOVALENKO, N.N.

COUNTRY OF INFO--USSR

SOURCE--PROBL TUBERK 48(1): 26-30. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUBERCULOSIS, ISONIAZID, AMINOSALICYLIC ACID, STREPTOMYCIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0437   STEP NO--UR/0000/70/048/001/0026/0030
CIRC ACCESSION NO--AP0134205
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0134205
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFICACY OF I.V. INJECTION OF
TUBAZID (ISONIAZID) STREPTOMYCIN AND PARA AMINOSALICYLIC ACID (PAS) IN
TREATING PATIENTS WITH DEGENERATIVE FORMS OF PULMONARY TUBERCULOSIS AND
ALSO THE CONCENTRATION OF THESE 3 BASIC TUBERCULOSTATIC AGENTS WITH THE
I.V. AND USUAL ROUTES OF ADMINISTRATION WERE STUDIED. THE FORMER METHOD
WAS EMPOLYED IN HANDLING 194 PATIENTS, 96 OF WHOM HAD FRESHLY IDENTIFIED
DISEASE AND 98 OTHERS SUFFERED FROM A LONG STANDING DISEASE TREATED
UNSUCCESSFULLY BY THE ROUTINE METHOD OF ANTIBACTERIAL THERAPY. IN
PATIENTS WITH FRESHLY RECOGNIZED DISEASE THE TREATMENT RESULTED IN
CLOSURE OF CATIVITES WITH CASEOUS DEGENERATION (96PERCENT) AND IN
NEGATIVE BECILLOSCOPY (98PERCENT). CLOSURE OF CAVERNS WAS ACHIEVED IN
25PERCENT AND NEGATIVE BACILLOSCOPY IN 60PERCENT OF CASES WHO HAD BEEN
UNSUCCESSFULLY TREATED BY THE ROUTINE METHOD FOR OVER 6 MO.
CONCENTRATION OF TUBAZID, PAS AND STREPTOMYCIN IN THE BLOOD, INTACT AND
AFFECTED AREAS OF A RESECTED LUNG, FOLLOWING I.V. INJECTION OF THESE
DRUGS, IS 2-16 TIMES AS HIGH AS WITH THEIR ORDINARY ADMINISTRATION.
    FACILITY: DEP. TUBERC., KIEV MED. INST., KIEV, USSR.

UNCLASSIFIED

USSR

UDC 532.562.31

IVANYUTA, Yu. F., KARPEYEV, Yu. N., and KOROVICHEV, B. K.,
Leningrad

"Autooscillating Motions of a Cylinder Towed in a Weakly Aqueous
Polymer Solution"

Moscow, Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza,
No 1, Jan-Feb 73, pp 162-164

Abstract: The action of polymer additions on characteristics of
the nonstationary oscillating motion of a towed cylinder, R.num-
ber=3·10^3-10^4, was investigated. The cylinder had the possibility
of lateral dislocations under the action of the force conditional
to the asymmetry of the periodic break-off of the boundary layer.
The towing speed, resistance, and the lateral dislocations of the
cylinder were registered. Average amplitudes of settled lateral
autooscillations and the resistance of the cylinder are shown as
functions of its towing speed. The increment of hydrodynamic re-
sistance of the oscillating cylinder is the more the greater the
amplitude of oscillations; it is in a freshly prepared solution
of polyethylene oxide much lower   than in water. Explanations are
given for the decrease of the amplitude of autooscillations of the
cylinder when towed in weak   polymer solution. Four figures, three
bibliographic references.

USSR

UDC   532.503.2:678

IVANYUTA, YU. F., KHISLAVSKAYA, N. G.

"Experimental Study of the Effect of Additions of Polyacrylamide on Frictional Resistance During Flow in a Space Between Coaxial Cylinders"

Translation: This paper contains some experimental results from a study of the effect of additions of a type of polymer on the frictional resistance during flow of water in the clearance between coaxial cylinders. The basic purpose of the experiments was determination of the effect of the molecular weight of the polymer and its concentration on the frictional resistance. Aqueous solutions of the domestically produced polymer -- polyacrylamide -- were taken as the test object. The tests were run for a broad range of variation of molecular weights and concentrations. There are 5 illustrations.

1/1

Semiconductor Technology

USSR

UDC 546.681'191548.522

IVANYUTIN, L. A., NISHANOV, D. N., D'YACHKOVA, N. N., SABININ, A. G., and ANDREYEV, V. M.

"Study of Silicon Migration During the Deposition of Epitaxial Layers of Gallium Arsenide From the Gaseous Phase"

Abstract: A study was made of the transfer of the short-lived radioisotope Si^{31} from the arsenous chloride and of the source of gallium during the epitaxial accretion of GaAs. The system H_2-$AsCl_3$-Ga was used as the gaseous phase and either irradiated quartz or elemental silicon mixed with the Ga was the Si source. Six runs were made under varying conditions and the amount of Si^{31} varied from below detection limits to 2×10^{20} cm^{-3}. The greatest concentration of Si in the epitaxial layer was observed when the elemental Si or crushed quartz was thoroughly mixed with a liquid containing 3-4% Ga. In this case, values for Si were similar to those for SiO_2. The proposed method for Si transfer is via the molecular species SiAs and SiO.

1/1

USSR

KIKIY, B. F., IVASHCHENKO, B. P., ROZHENTSEVA, S. A., Odessa Technological
Institute of the Refrigeration Industry

UDC 681.2.002.56:661.92

"Semiconductor Low-Temperature Hygrometer"

Moscow, Kholodil'naya Tekhnika, No 7, 1971, pp 22-23

Abstract: The new GTA-70 automatic thermoelectric hygrometer developed by the
Odessa Technological Institute of the Refrigeration Industry is described, and
test results are presented. The new hygrometer permits determination of the
dep point to -70° C at an ambient temperature of 20-30°. The operation of the
optical system and other units of the hygrometer are described in detail.
Operation of the instrument under laboratory and production conditions revealed
that it requires a warm-up time of 1.5-2 hours for accumulation of cold in the
intermediate tank with the water-alcohol solution. By leaving the auxiliary
thermopile with an intake of no more than 100 volt-amperes on the warm-up time
can be avoided. The reproducibility of the measurements is within the limits
of 1°. At a dew point of -70° C, 20-30 measurements per hour can be obtained,
and at a dew point of -40° C, 50-60 measurements per hour are possible.

1/1

ї

Welding

USSR   UDC 621.791.75:004.17

ASNIS, A. YE., IVASHCHENKO, G. A., Institute of Electric Welding
imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR, and
MOSENKIS, YU. G., Leninskaya Kuznitsa Plant

"Properties of Welded Joints With High-Strength Welds"

Abstract: The properties of low-carbon steel welded joints with
high-strength welds were studied under the condition of retain-
ing sufficient weld plasticity. It is shown that under this con-
dition, high-strength welds do not differ from joints with ordi-
nary welds. Micromechanical test data show the variation of
mechanical properties of the joint in the weld and the weld-
affected zone during welding by UONI-13/45 electrodes, Sv-08G2S
wire in carbon dioxide, ANP-1 (ANV-70) electrodes, and Sv-08KhGSMF
wire in carbon dioxide. For comparison of the deformability of
welded joints with ordinary and high-strength welds, samples were
manufactured with a two-way bead forming in a groove (type 1) and
1/2

USSR

ASNIS, A. YE., et al., Avtomaticheskaya Svarka, No 3, Mar 71, pp 15-17

butt joints with complete penetration (the weld of ordinary strength) and with poor penetration to 40 percent of the cross section of the specimen (high-strength weld) from which type 2 specimens were made. A true stress diagram is presented for the type 2 samples samples using various electrodes and wire. It is noted that tensometric measurements of the stresses in the welded joint under tension demonstrated that in the initial stage of plastic flow the stress growth rate in the basic metal, the weld-affected zone, and the weld is different. As a result of low plasticity of welds made by chalk-coated electrodes, cracks occurred in the welds with insignificant strain. In high-strength welds made by ANP-1 electrodes and Sv-08KhGSMF wire no cracks occurred during this stage.

2/2

- 77 -

USSR

UDC 621.791.756.011

ASNIS, A. YE., KASATKIN, B. S., IVASHCHENKO, G. A., and MUSIYACHENKO, V.F.,
Institute of Electric Welding imeni Ye. O. Paton

"Increasing Strength of Weld Joints Operating at Low Temperature"

Abstract: One of the measures for increasing workability of weld joints at
low temperature is the removal of stress concentrators. These stresses are
most significant at points where the seam merges with the base metal. A smooth
transition can be obtained using an electric arc furnace with a nonconsumable
electrode. At the Institute of Electric Welding work was performed to explain
the effect of electric-arc processing on the resistance of weld joints to
brittle failure at low temperature. Tests were conducted using steel 14KhM1DFR
where welded samples were subjected to a 300-ton force at -60°C. Seams in
the initial state fractured along the weld seam; seams which had been
mechanically cleaned failed in the seam itself; and seams which had been
electric-arc treated failed in the base metal at some distance from the weld.
Weld joints made in steels 09G2S and 10G2B which had been tempered at 650 and
550°C possessed a higher impact strength than those seams which had not been
heat treated. Thus it was concluded that local electric-arc treatment is an
effective method of increasing the workability of joints at low temperature.
2 figures, 3 tables.
1/1

USSR

UDC: 539.5

Drozd, N. P., Ivashchenko, R. K., Maksimovich, G. G., Mil'man, Yu. V.,
Slenzak, G. Ye., Trefilov, V. I., Kiev-L'vov

"Studies of Stability of the Structure and Mechanical Properties of Molybdenum
Under Long-term Temperature and Stress"

Abstract: The influence of long-term application of temperature and stress on the
structural stability and mechanical properties of molybdenum-based low alloys with
preliminary formation of cellular structure is studied. It is shown that changes
in mechanical properties of deformed molybdenum alloy during annealing under load
are determined basically by the annealing temperature, not by the load or holding
time at the temperature, within the temperature range studied (800-1000°C). The
action of the load during annealing of deformed molybdenum causes no significant
increase in temperature of transition to the brittle state. The introduction of
dispersed second phase particles allows reliable stabilization of the cellular
structure in molybdenum at 1000°C with significant loads over long periods of time.
If annealing of deformed molybdenum is performed in the temperature interval in
which primary recrystallization occurs, additional application of loads during
annealing can slightly increase the recrystallization rate and decrease strength
characteristics.
1/1

- 46 -

USSR

DANYUSHCHENKOV, I. A., IVASHCHENKO, R. K., MIL'MAN, YU. V.,
TREFILOV, V. I., YAKUSHINA, A. I., Kiev

"Influence of Structure and Testing Conditions on the Mechanical
Properties of Low-alloyed Molybdenum"

Abstract: A correlation is established between the mechanical
characteristics produced in testing of type TSM-2A sheet molyb-
denum with various structural states in extension and flexure.
It is demonstrated that the ratio of those characteristics de-
creases slightly as the deformation rate is increased. The
plasticity characteristics are independent of the deformation
rate if the test temperature is much higher than the temperature
of transition to the brittle state, and decrease rapidly as the
deformation rate increases if the test temperature is near the
temperature of transition to the brittle state.

1/1

Simulations

UDC: None

USSR

BIBUKOV, Yu. A., DOIKOV, V. G., and IVASHCHENKO, V. G.

"Device for Modeling the Neuron"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 14, 1973, p 149, No 373737

Abstract: This device, which contains an integrating circuit and thyristors, has a control electrode for the first thyristor connected with the integrator, a second thyristor being joined to the anode of the first.   The function of this control electrode is to expand the class of problems capable of solution.

1/1

101605t Electron-microscopic and optical study of the sur-
faces of amorphous polymer chips. Bezruk, L. I.; Lipatov, Yu.
S.; Ivashchenko, V. K.; Lipatova, T. E.; Pasechnik, Yu. V. (Inst.
Khim. Vysokomol. Soedin., Kiev, USSR). Vysokomol. Soedin..
Ser. B 1970, 12(1), 35–7 (Russ). Polyurethane rubber (I) samples
were exposed to silent elec. discharge in O and obsd. by electron
microscopy. Spherulite-like structures of 3 types appeared: hy-
perbolic, polygonal, and ellipsoidal. Other methods of sample
prepn. for electron microscopy, x-ray diffraction, and birefrin-
gence failed to reveal any signs of spherulite-like structures.
Anal. of the results showed that the spherulite-like structures
are due to inhomogenities on the I surface and not to the existence
of spherulites; I have a globular amorphous structure.   CPJR

REEL/FRAME
19821148

UNCLASSIFIED   PROCESSING DATE--30OCT70

1/2   016
TITLE--EFFECT OF QUENCHING FROM ROLLING HEAT ON THE MECHANICAL AND
   TECHNOLOGICAL PROPERTIES OF STRUCTURAL STEELS -U-
AUTHOR-(05)-PISKUN, V.T., ULEYNIKOV, N.P., KAPLIY, N.I., IVASHCHENKO,
   V.M., STYCHINSKIY, L.P.
COUNTRY OF INFO--USSR

SOURCE--STAL' 1970, 30(2), 161-3

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--STRUCTURAL STEEL, STEEL QUENCHING, MECHANICAL PROPERTY,
   MANGANESE STEEL, SILICON STEEL, STEEL TEMPERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1867   STEP NO--UR/0133/70/030/002/0161/0163

CIRC ACCESSION NO--AP0115686
                 UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70

2/2   016
CIRC ACCESSION NO--AP0115686
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STEEL BARS (14-22 MM DIAM.) CONTG.
C 0.16-0.35, MN 0.48-1.35, AND SI TRACE-1.05PERCENT WERE QUENCHED IN
WATER FROM THE ROLLING HEAT FOR 10-14 SEC AND TEMPERED BY RESIDUAL HEAT.
THE TREATMENT GENERALLY IMPROVED MECH. PROPERTIES, AS COMPARED WITH
THOSE OF THE HOT ROLLED STOCK.   FACILITY: DONETS. POLITEKH.
INST., DONETSK, USSR.

UNCLASSIFIED

TITLE--FORMATION OF RETICULAR POLYURETHANE BASED ON AN OLIGOMERIC MACRO
   DIISOCYANATE -U-

AUTHOR-(04)-NESTEROV, A.E., LIPATOVA, T.E., IVASHCHENKO, V.R., LIPATOV,
   YU.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(2) 150-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYURETHANE RESIN, OLIGOMER, ORGANIC ISOCYANATE, MOLECULAR
   WEIGHT, INTRINSIC VISCOSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0252   STEP NO--UR/0460/70/012/002/0150/0153

CIRC ACCESSION NO--AP0102302
                       UNCLASSIFIED

CIRC ACCESSION NO--AP0102302

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLYDISPERSITY, MOL. WT.
DISTRIBUTION, INTRINSIC VISCOSITY, AND DIMENSIONS OF MACROMOLS.
RESULTING FROM THE REACTION PRODUCTS OF A MACRODIISOCYANATE (I) (PREPD.
FROM POLYPROPYLENE GLYCOL (MOL. WT. 2000) AND 4, 4,DIPHENYLMETHANE
DIISOCYANATE) AND ETC(CH SUB2 OH) SUB3 WERE STUDIED. A SUDDEN INCREASE
IN THE MOL. WT. OF I AND IN THE M SUB2-M SUBZ RATIO WAS OBSD. BEYOND
SIMILAR TO 50PERCENT CONVERSION. A PLOT OF INTRINSIC VISCOSITY, M
SUBW-M SUBZ, AND R PRIME2-M SUBW VS. CONVERSION (WHERE (R PRIME2)
PRIMEONE HALF IS THE MEAN SQUARE RADIUS OF INERTIA, M SUBW IS THE WT.
AV. MOL. WT., AND M SUBZ IS THE Z AV. MOL. WT.) SUGGESTED THAT A
COMPLETELY CROSSLINKED POLYURETHANE, CONSISTING OF DISCRETE MICROBLOCKS
SPARSELY BOUND BY CHEM. BONDS, WAS FORMED DURING THE LAST STAGES OF
HARDENING.

Powder Metallurgy

UDC 621.762.04.001

USSR

IVASHCHENKO, V. V., Kiev Polytechnic Institute

"Effect of Inertial Loading on the Process of Vibrational Packing of Powder Materials"

Kiev, Poroshkovaya metallurgiya, No 2, May 72, pp 18-21

Abstract: Cited here are the results of an experimental study of various techniques of vibrational packing conducted on copper powder of two dimensional fractions (-05+04 and -016+01) under slight inertial pressure produced by a stationary male die and calibrated weights rigidly connected to it. The highest density is shown to be gained by applying slight pressures of the order of 5 kn/m² following 30 sec of free vibratory packing and step-wise loading. This technique promotes the packing process and yields a much higher finite density. Repeated loading increases the overall density of the system whereby the best results are obtained under slight pressure. An increase in pressure adversely affected the density in both cases. The experimental data on powders of a coarser dimensional fraction (-05+01) show a lower density increment than in the finer fraction. However, here too step-wise loading promotes the packing process to produce a higher finite density. (4 illustrations, 8 bibliographic references)

1/1

UDC 621.762.4:669.71

USSR

IVASHCHENKO, V. V., and CHUB, V. S., Kiev Polytechnical Institute

"Free Vibration Compacting of SAP Powders"

Kiev, Poroshkovaya Metallurgiya, No 12, Dec 70, pp 28-40

Abstract: Free vibration compacting of SAP-1 powder was studied in order to establish the possibility of even adjustment of the powder to a density near that of degassed ("presintered") SAP briquettes. The change in density of the powder mass during vibration compacting was generally similar to that observed for other loose bulk materials under the same conditions. It was found that there are optimal vibration frequencies (on the order of 100 Hz) producing the greatest density. Amplitude also has a definite optimal value producing maximum compacting. The optimal value determined in these experiments (40 microns) was the same for vibration frequencies from 50 to 200 Hz. Vibration compacting succeeded in producing powder densities of up to 1.8 g/cm^3, approaching that of preliminarily pressed briquettes.

1/1

UDC 547.822.5

USSR

IVASHCHENKO, Ya. N., MOSHCHITSKIY, S. D., and DANIL'CHENKO, V. P., Institute of Organic Chemistry, Academy of Sciences, Ukrainian SSR

"Derivatives of Tetrachloropicolinic Acid"

Abstract: A study was made of the reaction of ethyl ester and 3,4,5,6-tetra-chloropicolinyl chloride with hydrazine hydrate. When using tetrachloropico-linic acid ester, 4-hydrazino-3,5,6-trichloropicolinic acid hydrazide is formed. Tetrachloropicolinic acid hydrazide is obtained from tetrachloro-picolinyl chloride in hexane at -50 degrees, and bis-(tetrachloropiconoyl) hydrazine, in alcohol. In the absence of phosphorus pentachloride, 2,5-di-(3', 4', 5', 6'-tetrachloropyridyl-2')-1, 3, 4-oxadiazol is synthesized from the latter. The procedures for obtaining 11 derivatives of tetrachloropico-linic acid are presented; and their formulas, yields and melting points are given.

1/1

USSR

NOVEK-KHLEBNIKOV, P. A., and IVASHCHENKO, YA. N.

"A Herbicidal Compound"

Translation: A herbicidal compound is proposed which is based on chloro-benzoic acids. In order to obtain a synergic effect and reduce the after-effect on crops, trichloroaminopicolinic acid is added in amounts of 2-5% of the chlorobenzoic acids. The results of tests of the chlorobenzoic acids, trichloroaminopicolinic acid and mixtures of the compounds on an experimental field infested with pink gentian are given. The aftereffect of the herbicide was checked out on perennial woad and on winter wheat.
T. A. Belyayeva.

1/1

UDC 632.954 - 547.821

USSR

IVASHCHENKO, YA. N., MOSHCHITSKIY, S. D., KARABANOV, YU. V., and ZALESSKIY, G. A.

"Study of Herbicidal Activity of 4-Alkylaminotetrachloropyridines"

Kiev, Khimicheskaya Promyshlennost' Ukrainy, No 3, May-Jun 70, pp 23-24

Abstract: The authors studied the herbicidal activity of a new group of pentachloropyridine derivatives, viz. 4-amino-2,3,5,6-tetrachloropyridine and other 4-alkylamino-substituted derivatives in position 4, obtained by the interaction of pentachloropyridine with alkylamines in a medium of dioxane and methyl alcohol at 40-60°C. All the tested compounds were found to have appreciable physiological activity.

1/1

UNCLASSIFIED   PROCESSING DATE--03JUL70

TITLE--REACTION OF PENTACHLOROPYRIDINE WITH ORGANOMAGNESIUM COMPOUNDS -U-

AUTHOR--IVASHCHENKO, YA.N., MOSHCHITSKIY, S.D., YELISEYEVA, A.K.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (1), 58-9

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, PYRIDINE, ORGANOMAGNESIUM
   COMPOUND, NICOTINIC ACID, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/1700   STEP NO--UR/0409/70/000/001/0058/0059

CIRC ACCESSION NO--AP0049782
                      UNCLASSIFIED

Acc. Nr: Abstracting Service: Ref. Code:
AP0049782   CHEMICAL ABST. 5-70   URO409

100451c Reaction of pentachloropyridine with organomagne-
sium compounds. Ivashchenko, Ya. N.; Moshchitskii, S. D.;
Eliseeva, A. K. (Inst. Org. Khim., Kiev, USSR). Khim. Geter-
otsikl. Soedin. 1970, (1), 58-9 (Russ). A soln. of 17.5 g penta-
chloropyridine (I) in 100 ml mixt. of abs. tetrahydrofuran and
Et₂O was added dropwise to MeMgI (from 2.4 g Mg and 14 g
MeI) in Et₂O and the mixt. heated 2 hr at 50-60° to give 35%
2,2',3,3',5,5',6,6'-octachloro-4,4'-bipyridine, m. 247-8° (EtOH).
and 4-methyl-2,3,5,6-tetrachloropyridine (II, R = Me) (IIa) IIa
was also obtained, by gradually heating 2.75 g 2,3,5,6-tetrachloro-
pyridine-4-acetic acid 1 hr at 200°, in 95% yield. Similarly
prepd. were II (R, b.p./mm, m.p., and % yield given): Me,

$$R$$

Cl ⟍ ⟋ Cl (II)

Cl ⟍ N ⟋ Cl
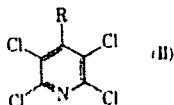
90°/0.02, 89-90° (EtOH + H₂O), 25; Et, 93°/0.02, 67-8°
(AcOH + H₂O), 85; Pr, 94-5°/0.02, —, 62; Bu, 100°/0.07, —,
68; PhCH₂, 165°/0.15, 105-7° (EtOH), 42.   To 1.15 g IIa in 30
ml H₂O at 80-90° was gradually added 1.5 g KMnO₄ during 30 hr
to give 0.2 g 2,3,5,6-tetrachloroisonicotinic acid, m. 220-2°
(H₂O).   S. K. Banerjee

REEL/FRAME
19801700

USSR   UDC 539.3:534.231.1

IVASHCHENKO, YE. N.

"Application of the Method of Functional-Invariant Solutions of V. I. Smirnov
and S. L. Sobolev to the Problem of Collision of Two Elastic Quarter-Planes"

Translation: The mentioned problem was solved by the indicated method in the
following statement. Two quarter-planes move opposite to each other with
identical velocity. At the time of impact all the points of the edge of one
quarter-plane come in contact with all the points of the corresponding edge of
the other quarter-plane. The material of both quarter-planes is the same and
their edges which are in contact at the time of impact are free of stress. The
tangential contact stresses are not considered. Formulas are indicated for
calculating the displacements and stresses in the quarter-planes after impact.
Examples illustrating the solution are presented.

1/1

Instrumentation and Equipment

USSR

UDC 621.394.8

VASIL'YEV, M. A., ZHUK, O. V., IVASHCHENKO, YU. N., and CHEREPIN, V. T.,
Institute of Metal Physics, Academy of Sciences Ukr SSR

"High-Speed Automatic Switching of Potentiometer Bands"

Kiev, Metallofizika, No 39, 1972, pp 118-122

Abstract: A small-scale electronic device has been developed making it possible
to fully automate the switching of bands on self-recording potentiometers accord-
ing to a previously given program. The use of contact-free elements provides
a fast switching rate which is determined by the type of output commutating
element. 4 figures, 1 table, 3 bibliographic references.

1/1

UDC 537.534.8

USSR

VASIL'YEV, M. A., IVASHCHENKO, Yu. N., and CHEREPIN, V. T.

"Mass Spectrometric Investigation of Ion Emission Arising During Bombardment of Metals With Argon Ions"

Kiev, Metallofizika, No 32, 1970, pp 148-153

Translation: The application of the industrial MI-1305 mass spectrometer for the study of secondary ion emission arising during the bombardment of metals with a beam of positive argon ions is described. A universal attachment, which makes it possible to use this mass spectrometer both for the study of secondary positive ions and for an ordinary isotopic analysis with standard ion sources, is proposed.

As a result of control tests on titanium specimens the instrument's resolving power equal to 100 was attained. The intensities of secondary ion currents for 13 metals are presented. The mass spectrum of the secondary ion emission arising during the bombardment of a target from vanadium with the primary ion beam is described in detail.

Bibliography: 7 entries.   Illustrations: 4.   Tables: 2.

1/1   - 78 -

1/2   043   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ION ION EMISSION OF PURE METALS -U-

AUTHOR-(03)-VASILYEV, M.V., IVASHCHENKO, YU.N., CHEREPIN, V.T.

COUNTRY OF INFO--USSR

SOURCE--DOPOV. AKAD. NAUK. UKR. USU, SER. A 1970, 32(2), 141-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ION EMISSION, METAL OXIDE, ENTHALPY, ALUMINUM, VANADIUM,
    TITANIUM, CHROMIUM, BERYLLIUM, ZINC, GERMANIUM, TUNGSTEN, IRON, SILICON,
    NICKEL, COBALT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/2068   STEP NO--UR/0441/70/032/002/0141/0143

CIRC ACCESSION NO--AT0122297
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0122297
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MASS SPECTROMETRIC STUDIES WERE
  CARRIED OUT OF SECONDARY ION EMISSION DUE TO ION BOMBARDMENT OF AL, TI,
  MO, V, CR, BE, ZN, GE, NB, W, FE, SI, NI, CO, TA, CU, PD, SB, AND SN AS
  PURE METALS. RELATIVE INTENSITIES WERE RECORDED OF THE SECONDARY ION
  CURRENTS, AND IT WAS FOUND THAT ELEMENTS SHOWING HIGHER AFFINITY TO O
  GAVE HIGHER YIELDS OF SECONDARY IONS. CORRELATION WAS ESTABLISHED
  BETWEEN DELTAH SUB298 PRIMEDEGREESK VALUES OF THE OXIDES OF THE ELEMENTS
  AND THEIR SECONDARY EMISSION INTENSITIES. SURFACE CHEM. COMPOS. PLAYED
  AN IMPORTANT ROLE IN THE PROCESS OF SECONDARY ION EMISSION.
FACILITY: INST. METALLOFIZ., KIEV, USSR.

UNCLASSIFIED

USSR

UDC 537.534.8

VASIL'YEV, M. A., IVASHCHENKO, Yu. N., and CHEREPIN, V. T.

"The Effect of Composition and Structure of Iron-Carbon Alloys on the Yield of Positive Ions During Sputtering by Ion Bombardment"

Kiev, Metallofizika, No 32, 1970, pp 143-148

Translation: Iron alloys containing from 0.025 to 1.5 wt.% carbon were sputtered by the primary beam of positive argon ions with an energy of 6 kev. The density of the bombarding current was approximately 0.6 ma/cm^2. The amount of ion current in the range of mass numbers 1-200 was measured by the mass spectrometric method. The existence of a linear dependence of the intensity of ion peaks for $^{12}C^+$, $^{56}Fe^+$, and $^{180}Fe_3C^+$ on the carbon content in iron was established. Investigation on deformed specimens from Armco iron and on an alloy with 0.73% carbon tempered after hardening showed that the intensity of peaks $^{56}Fe^+$ and $^{12}C^+$ was not sensitive to structural changes in the matrix.

Bibliography: 10 entries. Illustrations: 4. Tables: 2.

1/1

TITLE--SECONDARY ION EMISSION OF SOLIDS STUDIED WITH THE MI-1305 MASS
  SPECTROMETER -U-

AUTHOR-(02)-IVASHCHENKO, YU.N., CHEREPIN, V.T.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, (2), 181-3

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MASS SPECTROMETER, ION EMISSION/(U)MI1305 MASS SPECTROMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/0868   STEP NO--UR/0120/70/000/002/0181/0183

CIRC ACCESSION NO--AP0136302
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0136302

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE INDUSTRIAL MODEL OF MASS
SPECTROMETER MI-1305 WAS USED TO STUDY THE SECONDARY ION EMISSION DURING
ION BOMBARDMENT OF SOLIDS.   AN ATTACHMENT IS DESCRIBED TO BE USED BOTH
FOR THE STUDY OF THE SECONDARY POS. IONS AND FOR THE USUAL ISOTOPE ANAL.
WITH STANDARD ION SOURCES.   FACILITY: INST. METALLOFIZ., KIEV,
USSR.

UNCLASSIFIED

1/2   011   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--ELEMENTS OF MATHEMATICAL ANALYSIS -U-

AUTHOR--IVASHEVMUSATOV, O.S.

COUNTRY OF INFO--USSR

SOURCE--ELEMENTS OF MATHEMATICAL ANALYSIS (NACHALA MATEMATICHESKOGO
   ANALIZA) MOSCOW, NAUKA, 1970, 156 PP
DATE PUBLISHED-------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--MATHEMATIC ANALYSIS, DIFFERENTIAL CALCULUS, INTEGRAL CALCULUS,
   DIFFERENTIAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0051   STEP NO--UR/0000/70/000/000/0001/0156

CIRC ACCESSION NO--AM0133925
                         UNCLASSIFIED

CIRC ACCESSION NO--AM0133925
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. CHAPTER I
  INTRODUCTION 5. II DIFFERENTIAL CALCULUS 39. III INTEGRAL
  CALCULUS 67. IV DIFFERENTIAL EQUATIONS 104. APPENDIX 128.
  TABLES 157.

UNCLASSIFIED

USSR

IVASHEVSKIY, S. N., KARTASHEV, A. I., and KOROLEV, A. N.

"Device for Converting Graphic Information"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovar-nyye znaki, No 28, 1972, Author's certificate 352282, p 149

Abstract: This invention contains an information carrier, a photo-graphic camera connected to a feedback amplifier, and a cathode-ray tube. A rotating mirror is also involved, as a drawing of the apparatus shows. The functional possibilities of the device are extended by the amplifier, the mirror, and a modulator tube.

1/1

IVASHIN, V.V.

machine design

THE DIFFRACTION OF X-RAYS IN ... DIFFERENT DEGREE OF VOLUMETRIC DISCREP-ANCY BETWEEN THE PRECIPITATION PHASE AND THE MATRIX

17 April 1973

Joint Publications Research Service
1000 North Glebe Road
Arlington, Virginia 22201

The report contains an investigation of the diffraction of X-rays in aging alloys having a different degree of volumetric discrepancy between the precipitation phase and the matrix.

USSR
Materials
Metallurgy and metallography
Alloys

UF

UNCLASSIFIED

INVESTIGATION OF THE DIFFRACTION OF X-RAYS IN
AGING ALLOYS HAVING A DIFFERENT DEGREE OF
VOLUMETRIC DISCREPANCY BETWEEN THE
PRECIPITATION PHASE AND THE MATRIX

In references [1—6] it was demonstrated that the basic cause of the
observed fading, and also the unique transformation of the profile of
diffraction lines of aged specimens of nimonic alloy are the elastic
displacements of the atoms in a solid solution, caused by the presence of
specific atomic volumes of the precipitation phase V_B and the matrix V_A.
However, a systematic study of the role of the volumetric factor (ΔV,
$V = (V_B - V_A)/V_A$) in the formation of selective reflections was not conducted.
In connection with this, it was of interest to study the quantitative relation-
ships of the scattering of X-rays by dispersion-hardened alloys with a
different degree of volumetric discrepancy between the precipitation phase
and the matrix.

The investigation was conducted on nickel alloys KhN77TYuR
(nimonic) and KhN67VMTYu, having γ'-solid solutions of the same type
and precipitating γ'-phases (reference 7), but, however, essentially
differing in the magnitude of the volumetric factor. For alloy KhN77TYuR
the magnitude of $\Delta V/V$, as is known (reference 6) amounts to ~0.02,
and for alloy KhN67VMTYu its maximum absolute value is equal to ~0.001.
The considerable proximity of the alloys being investigated with respect to
structural state made it possible to exclude the possible effects of outside
factors on diffraction.

- 1 -

[I - USSR - I]

Superalloys

USSR   UDC 54--165:669.107.3

GITGARTS, M. I., TOLSTOY, A. V., and IVASHIN, V. V., Institute of the Problems of Reliability and Life of Machines of the Academy of Sciences Belorussian SSR

"Volumetric Changes During Aging of Nimonic Alloy"

Abstract: An experimental investigation was made of the dependence of the relative elongation $\triangle$ 1/1 and the relative change of the lattice constant $\triangle$ a/a of Nimonic alloy (Ni-Cr-Al-Ti) on its volumetric separation share p. Dilatometric investigations revealed that the decomposition of the solid solution of Nimonic is accompanyed by a volumetric contraction effect. The degree of contraction is a linear function of the volumetric content of the γ'-phase. The lattice constant of the matrix measured by normal reflections changes equally to the linear dilation. It is demonstrated that the volumetric effect results from concentration changes and interfacila elastic deformations. Therefore, the dilation by decomposition of the solid solution of Ni-Cr-Al-Ti can be described as consisting of compressive and elastic dilations. The first is caused by impoverishing of the matrix phase by Al and Ti atoms; the other is determined by the inadequacy of specific atomic volumes of the
1/2

USSR

GITGARTS, M. I., et al., Fizika Metallov i Metallovedeniye, Vol 33, No 4, Apr 72, pp 820-823

separation and the matrix. One illustration, one formula , one table, fourteen bibliographic references.

2/2

1/2   026   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--ACTIVITY AND PHASE COMPOSITION OF A CHROMIUM CALCIUM NICKEL
   PHOSPHATE CATALYST -U-
AUTHOR-(05)-IVASHINA, V.S., BUYANOV, R.A., OSTANKOVICH, A.A., OLENKOVA,
   I.P., KOTELNIKOV, G.R.
COUNTRY OF INFO--USSR

SOURCE--KINET. KATAL. 1970, 11(1), 160-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYST ACTIVITY, CATALYTIC DEHYDROGENATION, BUTENE,
   BUTADIENE, NICKEL, X RAY DIFFRACTION STUDY, THERMAL ANALYSIS, CHROMIUM,
   PHOSPHATE, CALCIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0528   STEP NO--UR/0195/70/011/001/0160/0165

CIRC ACCESSION NO--AP0119447
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0119447

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE CATALYST WAS STUDIED BY
   USING X RAY DIFFRACTION, D.T.A., AND DIFFERENTIAL THERMOGRAPHY.   THE
   CATALYST REPRESENTS A 1 PHASE SYSTEM OF NI PRIME2 POSITIVE AND CR PRIME2
   POSITIVE SOLID SOLNS. IN A LATTICE OF CA PHOSPHATE. THIS SOLN. FORMS ON
   HEATING DURING CATALYST PREPN. THE CATALYTIC ACTIVITY OF THE CATALYST
   IN THE DEHYDROGENATION OF BUTENES TO BUTADIENE DEPENDS ON THE NI CATION
   CONCN. IN THE LATTICE OF THE CATALYST. CA PHOSPHATE SERVES AS THE
   CATALY CARRIER AND THE CA-CR COMPN. IS CATALYTICALLY INACTIVE.

UNCLASSIFIED

USSR   UDC: 621.372.853.1.092.22

IVASHKA, V. L., LAUTSYUS, A. S., KIBARTAS, V. V.

"Determining the Surface Resistivity of Thin Metal Layers on Superhigh Frequencies"

Translation: The authors calculate the coefficient of reflection from a system consisting of a thin metal layer and a dielectric substrate accommodated in a rectangular waveguide. Formulas are derived for a type H_{10} wave which interrelate the surface resistivity, parameters of the substrate and modulus of the coefficient of reflection. The results are used as a basis for determining the surface resistivity of thin layers of chromium in the 8-10 GHz range. Bibliography of three titles. Authors' abstract.

1/1

USSR   UDC: 53.07/08:539.216.2:621.372.852

VALYUKENAS, V. I., IVASHKA, V. P., and KIBARTAS, V. V.

"Determining the Surface Resistivity of Fine Metallic Layers
by Measuring the Transmission Factor in the UHF Range"

Vil'nyus, Litovskiy Fizicheskiy Sbornik, vol 12, No 2, 1972,
pp 297-303

Abstract: A method is proposed for determining the surface con-
ductivity or resistivity of fine metal layers from the change in
absolute value of the transmission factor, with the properties of
the substrate for those layers and the reflection from a matched
load taken into account. The theory of the method is developed
and the equipment used for the determinations is described. Fre-
quency of the uhf waves used was 9150 MHz, and the layers were of
aluminum and chromium, 40-700 Å thick. A block diagram of the
equipment is given and the results of the measurements for various
types of the Al and Cr specimens are presented in tabular form.
The authors, associated with the V. Kapsukas State University at
Vil'nyus, express their gratitude to V. Tsukerman for participat-
ing in the measurements.
1/1

USSR   UDC 616.53-008.6-02:$\sqrt{616}$-008.922.1.04+616.12-008.46$\sqrt{}$ (047)

YEVNINA, I. I., and IVASHKEVICH, E. I., Novosibirsk Scientific Research
Institute of Pathology of Blood Circulation RSFSR Ministry of Health

"The Effect of Oxygen Deficiency and Cardiac Insufficiency on Glucocorticoid
Activity of the Adrenal Cortex"

Abstract: A brief review of the literature on the effect of chronic hypoxia
and pulmonary-cardiac insufficiency on adrenocortical activity is presented.
The opinions expressed are highly contradictory, but despite the contradic-
tions, it has been established that oxygen deficiency induces deep changes
in metabolic processes, particularly effecting the excretion of cortico-
steroids. Changes in adrenocortical activity induced by pulmonary-cardiac
diseases are analogous to those caused by chronic hypoxia. Studies of
patients with cardiac insufficiency showed morphological changes in the
adrenals such as glandular hypertrophy, hyperplasia in the nodal zones, and
the development of cavities and hemorrhages in these zones. The changes
are also characterized by progressive adrenal inadequancy due to the muscular
load required for breathing, energy for which is furnished chiefly by car-
bohydrate metabolism. Literature data on adrenocortical hypofunction of
1/2

USSR

rheumatic etiology, and hypofunction due to cyanotic and other types of cardiac diseases are also reviewed. The literature data, despite contradictions on the effect of hypoxia on the secretion of corticosteroids and metabolites, confirm the fact that prolonged chronic hypoxia depresses and in the end exhausts adrenocortical functional activity.

2/2

- 74 -

1/2   019   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--EFFECT OF ORGANOSILICON COMPOUNDS ON THE PROPERTIES OF POLY,METHYL
  ACRYLATE, COATING FILM -U-

AUTHOR-(04)-IVASHKEVICH, S.L., OLEYNIK, N.N., SOROKINA, N.S., KOTOV, M.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 94-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MILITARY SCIENCES

TOPIC TAGS--ORGANOSILICON COMPOUND, POLYMETHYLMETHACRYLATE, LEATHER,
  FOOTGEAR, SPECIALIZED COATING, PROTECTIVE COATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1108   , STEP NO--UR/0323/70/000/001/0094/0097

CIRC ACCESSION NO--AT0134794
                         UNCLASSIFIED

CIRC ACCESSION NO--AT0134794
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ORGANOSILICON COMPDS.
USED HAD THE STRUCTURE (NEGATIVE SIHR3 NEGATIVE) SUBN, WHERE R EQUALS ME
OR ET. THEY WERE USED IN CONJUNCTION WITH AQ. EMULSIONS OF POLY(ME
ACRYLATE) FOR APPLYING A PROTECTIVE COVERING TO THE UPPERS OF LEATHER
WORK BOOTS. THEY GAVE IMPROVED RESISTANCE TO WATER AND TO HEAT THAN WAS
OBTAINED WITH POLY(ME ACRYLATE) ALONE. COLOR FASTNESS OF THE LEATHER
WAS IMPROVED AND SO WAS RESISTANCE TO ABRASION AND TO REPEATED FLEXING.
       FACILITY: KIEV. TEKHNOL. INST. LEGK. PROM., KIEV, USSR.

UNCLASSIFIED

USSR

TERYAYEV, V. A., SHESTAKOV, I. B., PEREPLETCHIKOV, G. N., MARKOVSKIY, V. N., IVASHKIN, G. P., MAR'YANOVSKIY, M. M.

"Method of Manufacturing Thin-Film Magnetic Matrices"

Translation: A method is suggested for manufacturing thin-film magnetic matrices differing from known methods in that in order to decrease the ohmic resistance of the control lines and retain the magnetic properties of the matrix, the conducting layers are produced by gluing down foil using organic varnishes (glues) as the matrices are heated in the presence of a magnetic field in the plane of the substrate. One illustration.

1/1

USSR

IVASHKIN, V. I.; et al (Moscow Power Engineering Institute)

"Effect of the Duration of a Magnetizing Pulse on Nanosecond Magnetization of Permalloy Films"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy: Fizika; February, 1971; pp 7-10

ABSTRACT: A study was made of the effect of the duration of a magnetizing pulse on signals of the nanosecond magnetization of permalloy films, the trajectories of the average magnetization, and the effective attenuation parameter. This effect increases in the measure that the coercive force of the films increases.

The article includes several figures. The first two show curves for the 90°- and 180°-magnetization of several samples. Another figure shows the trajectories of the average magnetization with 90°- and 180°-magnetization, for the curves given in the first two figures.

1/1 There are 15 bibliographic references.

- 42 -

USSR

UDC: 629.78.015.076.6

IVASHKIN, V. V.

"Optimum Correction of a Planetary Approach Trajectory for Transition to an Artificial Satellite Orbit"

Moscow, Upr. dvizhushchimisya cb"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control. Tbilisi, 1968--collection of papers), 1972, pp 386-394 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.42)

Translation: The paper deals with the problem of choosing an optimality criterion when correcting the trajectory of a space vehicle to meet the conditions of the next maneuver. A comparative analysis of two criteria is made for an arbitrary maneuver: minimum correcting thrust and the minimum sum of the pulse thrusts for correction and maneuvering. It is shown that with a changeover to the second criterion the overall energy expenditures decrease in proportion to the magnitude of the correcting thrust. A quantitative analysis is made of the effectiveness of the complete criterion for an Earth-Moon trajectory; it is shown that use of this criterion economizes

1/2

USSR,

IVASHKIN, V. V., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch.
po avtomat. upr. Tbilisi, 1968--sbornik, 1972, pp 386-394

on energy expenditures amounting to about 10% of the correcting pulse thrust.
One table. Résumé.

2/2

– 41 –

USSR

IVASHKIN, V. V.

"Optimal Correction of Approach Trajectory to a Planet for Entry into Orbit"

Upr. Dvizhushchimisya Ob'yektami. Tr. IV Vses. Soveshch. po Avtomat. upr.
Tbilisi, 1968 [Control of Moving Objects, Works of Fourth All-Union Confer-
ence on Automatic Control, Tbilisi, 1968 -- Collection of Works], Moscow,
1972, pp 386-394, (Translated from Referativnyy Zhurnal, Mekhanika, No 10,
1972, Abstract No 10 A45, author's view).

Translation: The problem is studied of selecting a criterion for optimality
in correcting the trajectory of a spacecraft to allow subsequent maneuver.
A comparative analysis of two criteria is conducted for an arbitrary maneu-
ver: the minimum corrective impulse and the minimum total impulse required
for correction and maneuver. It is shown that when the second criterion is
used, the total power expended is decreased in proportion to the correction
impulse. A precise solution is presented for the problem of optimization
of correction. For flight trajectories from the earth to the moon, a quan-
titative analysis is performed of the effectiveness of the total optimality
criterion; it is demonstrated that its use can assure a savings of total
power consumed of about 10% of the correction impulse.
1/1

- 33 -

1/2   020   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--CONSTRUCTION OF THE KROTOV FUNCTION FOR CERTAIN PROBLEMS OF ORBITAL
   TRANSFER OPTIMIZATION -U-

AUTHOR--IVASHKIN, V.V.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKIE ISSLEDOVANIIA, VOL. 8, MAR-APR. 1970, P. 189-200

DATE PUBLISHED--------70

SUBJECT AREAS--SPACE TECHNOLOGY

TOPIC TAGS--TRAJECTORY OPTIMIZATION, ORBIT TRANSFER, EARTH SATELLITE ORBIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1741   STEP NO--UR/0293/70/008/000/0189/0200

CIRC ACCESSION NO--AP0115570
                              UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0115570
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF OPTIMAL
  TRAJECTORIES FOR CERTAIN CLASSES OF TRANSFERS BETWEEN COPLANAR ORBITS IN
  A CENTRAL NEWTONIAN GRAVITATIONAL FIELD. KROTOV'S (1962) SUFFICIENT
  CRITERIA OF OPTIMALITY ARE USED TO DEMONSTRATE THE PULSED NATURE OF
  OPTIMAL (IN THE SENSE OF MINIMUM CHARACTERISTIC VELOCITY) TRAJECTORIES
  FOR A SERIES OF TRANSFERS BETWEEN KEPLERIAN ORBITS IN A PRESCRIBED
  CIRCLE. IT IS SHOWN THAT FOR ALL TRANSFERS SAVE TWO, THE MINIMUM
  CHARACTERISTIC VELOCITY IS NOT DECREASED WHEN A PASSIVE EXIT FROM THE
  CIRCLE IS ADMITTED.

UNCLASSIFIED

IVASHKINA, N. A.

JPRS 56,499
14 July 72

SOME RESULTS OF USING DIAGNOSTIC ANALYSIS FOR EVALUATING
PHYSIOLOGIC REACTIONS OF COSMONAUTS DURING FLIGHT OF THE
"SOYUZ-3," "SOYUZ-4," AND "SOYUZ-5" SPACESHIPS

[Article by V. I. Antonova, A. A. Gurovsky, V. A. Degtyarev, N. A. Gurovskaya, A. D. Yegorov, G. A. Ivashkina, Z. G. Ivanova, I. Ye. Korsunsky, A. P. Polyakova and I. T. Akulinichev; Moscow, Aktual'nyye Voprosy Kosmicheskoy Biologii i Meditsiny (Current Problems in Space Biology and Medicine), Russian, 1971, pp 9-17]

During the space flight of the "Soyuz-3," "Soyuz-4," and "Soyuz-5" ships, radiotelemetric systems were used in monitoring such physiologic parameters as the electrocardiogram (ECG), seismocardiogram (SCG) and pneumogram (PG). In processing this information it was possible to determine the frequency of cardiac contractions and the respiration rate and the principal ECG and SCG indices for each cosmonaut were measured.

The collected data were grouped in accordance with the stages in training and conducting space flight. The following periods were discriminated:

preflight (PF) period, including data obtained in an examination of crews during ordinary work activity 15-20 days prior to the flight;

prelaunching, including the results obtained during the launching (PL-1) and during the periods of the five-minute countdown (PL-2);

active segment (AS), the segment in which the space-ship is put into orbit;

orbital flight (OF);

descent segment (D).

6

Ivashkina, N. A.

JPRS 56,166

4 July 72

3

QUANTITATIVE EVALUATION OF PHYSIOLOGIC INDICES OF COSMONAUTS
DURING FLIGHT OF THE 'SOYUZ-9' - 'SOYUZ-9' SPACESHIPS

[Article by L. V. Antsenko, A. A. Putsnov, V. A. Degtyarev-
skaya, A. D. Yegorov, R. A. Vasil'yeva, A. I. Kalacheva, V. R.
Lyenia, A. P. Polyakova and I. B. Svistsnov; Moscow, Aktual'-
nyye Voprosy Kosmicheskoy Biologii i Meditsiny (Current Prob-
lems in Space Biology and Medicine), Russian, 1972, pp 7-9]

    In conducting medical monitoring an evaluation of the
health of cosmonauts during spaceflight is made on the basis
of information received during radio conservations and tele-
vision contacts, by an analysis of the registered physiologic
parameters and the microclimatic parameters in the manned con-
partments, by conducting medical self- and mutual monitoring,
etc. (Ye. I. Vorob'yov, et al., 1969; 1970).

    In the process of decoding the physiologic parameters
the frequency of cardiac contractions and the respiration rate
were ascertained and the principal indices of the electro-
cardiogram and seismocardiogram were measured.

    The principal objectives of the quantitative evalua-
tion and the statistical analysis of physiologic data were:

    evaluating the significance of the influence of dif-
ferent flight factors on physiologic indices;

    determining the direction of change of physiologic
indices during different flight periods for different cosmo-
nauts;

    evaluating the dynamics of the mean values of the
physiologic indices during different flight periods and the
individual characteristics of the reactions of cosmonauts;

USSR

UDC 621.51569.71

LITVINTSEV, A. I., IVASHKO, K. V., and KLIMOVA, L. N., Kuybyshev

"Microstructural Changes in Particles of AFS-1, 2, 3 Industrial Aluminum Powders During Annealing"

Abstract: A study is made of microstructural changes which take place in individual nodulized particles of industrial aluminum powders after annealing at 550, 600, and 700°C with a holding time of 1 hr. AFS-1, 2, 3 industrial aluminum powders with aluminum oxide contents of 7, 11.8 and 15%, respectively, were used. It is shown that during annealing of the powders in air and argon media the nodulized particles split and internal porosity appears. In addition to oxidation, the growth of small crystals γ-Al_2O_3 takes place in aluminum powder during heating in air at 600 and 650°C. During heating in argon medium oxidation occurs due to the interaction of the moisture of the hydroxide phase with aluminum. The resultant modification of aluminum oxide remains in a dispersed state. The process of disintegration of nodulized particles is determined by the internal sources of degassing, which are fragments of hydroxide boundaries making up the conglomerate of nodulized particles.
1/1

- 38 -

Hydrobiology

USSR

IVASIK, V. M., MASLENNIKOVA, Ye. I. and SOBOLEV, Yu. A.

Abstract: This book is concerned with the productivity of terrestrial, fresh-
water, and marine plants and animals. Topics of discussion include the potential
productivity and evolutionary prosperity of fish species, the comparative produc-
tivity of marine invertebrates, river crayfish and their productivity, the geometric
progression of the potential capacity of animal propagation, the "economic" use of
feedstuffs for the growth of fish and other animals, and the dependence between
size, occupied space, and the biological productivity of several marine species.
It is emphasized that potential productivity is calculated by adding the terms of
the propagation progression, which is different in principle from a geometric pro-
gression. The factors determining productivity may interact or counteract.
Animal productivity varies with the time conditions of the medium, as well as with
human interferences. Productivity is enhanced during evolution. This book will
be valuable for developing methods of evaluating potential production capacities
of various species for use in breeding and culturing, in the acclimatization of
species, and in forecasting reproduction.

1/1

USSR

UDC 669.017.3

GRIDNEV, V. N., IVASISHIN, O. M., and OSHKADEROV, S. P., Institute of Metal Physics, Academy of Sciences Ukr SSR

"Austenite's Inheritance of the Alpha-Phase Defect Structure in the Rapid Heating of U9 Steel"

Abstract: The conditions of rapid annealing (1000°/sec) of U9 deformed steel (0-86%), done prior to deformation in the tempered, normalized, and annealed states, were studied by dilatometric and thermal analyses, which made it possible to obtain structures with different interplate distances. Removal of the effects of prior plastic deformation proceeds in three steps: in the temperature interval of the alpha-phase, in the alpha-gamma-phase transformation, and in the gamma-phase. The degree of prior deformation in the studied limits has only a quantitative effect, and does not change the overall picture of annealing. During rapid heating the austenite inherits a defect structure of the deformed alpha-phase, whereupon the increased defectiveness of austenite is preserved almost to its recrystallization temperature. 5 figures, 7 bibliographic references.

1/1

USSR

UDC 681.3(02)

IVAS'KIV, YU. L.

"Principles of Constructing Multivalued Physical Circuits"

Printsipy postroyeniya mnogoznacimykh fizicheskikh skem (Principles of Construc-ting Multivalued Physical Circuits), Kiev, Naukova Dumka Press, 1971, 316 pp, ill., 2 r. 27 k. (from RZh--Avtomatika, Telemekhanika i vychislitel'naya tekh-nika, No 4, Apr 72, Abstract No 4B12K)

Translation: A study was made of the principles of constructing multivalued physical circuits for digital equipment. The study was conducted on the level of the general problem of designing digital automata with a multivalued struc-tural alphabet. The basic steps in solving this problem were investigated, and the present state-of-the-art in research on each level was analyzed. The advan-tages of using nonbinary number systems and multivalued coding are discussed. A brief characteristic of the present state-of-the-art and prospects for the development of research in the field of developing multivalued physical circuits are presented, and a procedure is proposed for designing logical circuits based on them. The book is designed for scientific and technical workers in the field of digital engineering, teachers, students, and graduate students in the corres-ponding specialties.
1/1

- 54 -

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"

Abstract: Aqueous and alkaline hydrolysis of bis-(chloromethyl)-
thiophosphinic acid was studied in an attempt to elucidate the
reaction mechanism. They 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 mole-
cule splits off rapidly, then another at a much slower rate; the
first stage is a first order reaction. In alkaline hydrolysis
HNO$_3$ was used for titration, the process occurring in one phase.
In accordance with such kinetic rates the reaction mechanism con-
1/2

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

USSR

IVASYUK, N. V., SHERMERGORN, I. M., Kazan' Institute of Veterinary
Medicine imeni N. E. Bauman

"Mercaptomethyl Derivatives of Phosphorus"

Abstract: A series of four Alkyl(aryl)mercaptomethylphosphinic
acids (I) were prepared by two different methods. The first
method consisted of treating alkyl(aryl)halomethylphosphinic acids
with thiourea and subsequently hydrolysing isothioureamethyl de-
rivatives in alkaline solution. In the second method, the alka-
line hydrolysis of alkyl(aryl)halomethylthiolophosphinic acids
or chlorides was used to prepare (I), identical with those ob-
tained by the first method, but in higher yields (70-80 percent).
Kinetics of alkaline hydrolysis of alkyl(aryl)chloromethyl-
thionophosphinic chlorides (II) were studied in water-dioxan
solution. The tabulated data show that the hydrolysis rate con-
stants of (II) decrease with the increase in electronegativity
of alkyl(aryl) radical, although changes in E and $\Delta S \neq$ parameters
1/2

USSR

in the Eyring equation do not follow a detectable pattern. These data confirmed the presumed mechanism of hydrolysis via intra- molecular substitution of SH anion for Cl atom of the chloro- methyl radical. The elemental analysis data and some physical constants of I and II are tabulated and procedures of preparation and kinetic study are described.

2/2

- 54 -

UDC 547.241.07

USSR

IVASYUK, N. V., and SHERMERGORN, I. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov

"A Method of Making Derivatives of 1,3,5-Dithiaphosphorinane"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 284987, class 12, filed 5 Jul 69, published 29 Oct 70, pp 24-25

Translation: This Author's Certificate introduces: 1. A method of making derivatives of 1,3,5-dithiaphosphorinane. As a distinguishing feature of the patent, bis-(mercaptomethyl)phosphinic acid is allowed to react with an aldehyde or ketone in   water with the application of heat followed by isolation of the product by conventional methods. 2. A modification of this procedure is distinguished by the fact that the process is carried out at the boiling temperature of the reaction mixture. 3. A modification of this method is distinguished by the fact that a mineral acid such as hydrochloric acid is used as a catalyst.

1/1

USSR   UDC: 8.74

ZINOV'YEV, E. V., IVAYLOVSKIY, Yu. Ye.

"Automatic Compilation and Arrangement of a Word Form Dic-
tionary in Alphabetic Order"

Translation: A method is proposed for automatic compilation
and alphabetic ordering of a dictionary of word forms; the
procedure is based on using the properties of various methods:
the method of separators, the method of contracting codes,
the value method. A description is given of the structure
of representation of the dictionary in the computer memory,
and the dynamics of compiling the word form dictionary. In
the method proposed by the authors, two address parts are used
in compilation and alphabetic arrangement of the dictionary.
The paper gives the algorithm for automatic compilation and
alphabetic arrangement of the word form dictionary. The algo-
rithm is realized on the "Minsk-22" and "Minsk-32" computers.
One table, bibliography of six titles.
1/1

USSR

UDC: 681.325

KYSHTYMOV, V. A., IVCHENKO, A. M.

"A Converter Which Changes Code to DC Voltage Amplitude"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292171, Division G, filed 28 Mar 69, published 6 Jan 71, p 134

Translation: This Author's Certificate introduces a converter for changing code to AC voltage amplitude. The unit contains digital-place flip-flops, a reverse flip-flop, a sign flip-flop and a digital controllable divider. As a distinguishing feature of the patent, conversion accuracy is improved by incorporating two kipp oscillators, the output of the first being connected to the inputs of all digital-place flip-flops except for the first one, while the output of the second kipp oscillator is connected to the input of the reverse flip-flop.

1/1

USSR

IVCHENKO, G. I.

"The Asymptotic Behavior of Powers of Points in a Random Graph"

Teoriya Veroyatnostey i Eye Primeneniya [Theory of Probabilities and its Applications], 1973, Vol 18, No 1, pp 195-203 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V9, by the author).

Translation: A study is made of a random, nonoriented graph $\Gamma_n(p)$ with n points $P_1, \ldots, P_n$, in which the line between P_i and P_j exists with probability p in dependently of the existence of other lines. We represent by ν_i the power of point P_i, i.e., the number of lines departing from P_i, $i = 1, 2, \ldots, n$, and suppose $\nu_{(m)}^1$ is the mth least, while $\nu_{(n-m+1)}$ is the mth greatest of the numbers $\nu_1, \ldots, \nu_n$. In particular, $\nu_{(1)}$ and $\nu_{(n)}$ are the minimal and maximal powers of points in $\Gamma_n(p)$. This work is dedicated to the study of the asymptotic behavior of random quantities $\nu_{(m)}$ and $\nu_{(n-m+1)}$ with arbitrary fixed $m \geq 1$ as $n \to \infty$, as well as the random quantity $\rho = \nu_{(n)} - \nu_{(1)}$, i.e.,

1/2

. USSR

the length of the interval which contains the values of the power of all points in the graph. We note that $v_{(1)}$ characterizes the degree of connectedness of the graph; therefore, $v_{(1)}$ is one of the most important characteristics of the graph.

2/2

USSR

UDC 541.182.2/3

IVCHENKO, I. N., and YALAMOV, Yu. I., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"A Direct Method for Calculating the Thermophoretic Forces Acting on Rather Large Aerosol Particles"

Abstract: The system considered is a rather large nonvolatile aerosol particle in a nonuniformly heated gas. The equilibrium of thermal energy and tempera- ture jump at the particle surface determine the temperature gradients within and in the vicinity of the particle. The distribution of velocities within the gas are determined from the Navier-Stokes equation. The coefficient of heat conductivity for a particle can be calculated from irreversible reaction thermodynamics. Using the above equations plus a tensor analysis for the surface tension, an equation is derived describing the movement of aerosol particles in a non-uniformly heated gas. Results derived from this equation are about twice as high as those from a previously published work based strictly on thermodynamic considerations.

1/1

UDC 543.226

USSR

TYCHENKO, I. N., YALAMOV, Yu. I., and RABINOVICH, Ya. I., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"A Theoretical and Experimental Study of the Thermophoresis of Aerosol Particles at Large Knudsen Numbers"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, No 3, Mar 71, pp 583-587

Abstract: An expression was derived for the velocity of thermophoresis of small aerosol particles under conditions approaching that of free motion of gas molecules without interference due to the presence of aerosol particles. The expression obtained was in satisfactory agreement with experimental results obtained by B. V. Deryagin and Ya. T. Rabinovich in a study of the thermophoresis of a NaCl aerosol, paraffin oil mist, and tobacco smoke in air under conditions in which the effects of thermal transpiration and gravitational convection were eliminated (Rabinovich, Candidate's Dissertation, Moscow, 1965).

1/1

Aerosols

USSR

IVCHENKO, I. N., and YALAMOV, Yu. I., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Hydrodynamic Method of Calculation of the Velocity of Thermophoresis of Moderately Large Non-volatile Aerosol Particles"

Abstract: On the basis of an analysis of conditions pertaining to the motion of the gas, a theory of the thermophoresis of moderately large non-volatile aerosol particles was developed on the assumption of gas flow accompanied by sliding. A formula is derived for the velocity of thermophoresis of aerosol particles which expresses the functional dependence of this velocity on coefficients of isothermal and thermal sliding of the gas as well as on that of the temperature change. On the basis of a solution of a linearized Boltzmann equation with an ideal elliptic statistical model of the collision operator, and expression is derived for the velocity of thermal sliding of a gas located above a solid flat wall. Expressions for the coefficients of isothermal sliding and of the temperature change are discussed.

1/1

IVCHENKO, I. Ye.

Telephone Systems

DIAL TELEPHONES INSTALLED IN YALTA

[Article by I. Ye. Ivchenko, director of the Yalta Production-Technical Communications Directorate; "Effective Utilization of Equipment", Moscow, Vestnik Svyazi, Russian, No 8, August 1972, pp 42-43]

Interurban dial telephones of the ATA-20 type which appeared for the first time at the Yalta resort in 1966 in a short period of time became very popular among the vacationers. The number of dial telephones has been growing steadily since that time and on 1 July 1972 there were 131 ATA units, in addition to that the same system also includes 46 direct subscribers.

At first we assigned a separate channel to each ATA for a certain city (which was stipulated by the hookup scheme), which justified itself with a small number of ATA units (three to five) and their installation in large telephone points. With the increase in the number of ATA units it became necessary to hook them up on the basis of a selective scheme from any dial telephone of one rate zone to any channel.

Moreover two or more ATA units were installed, several directions where 18 ATA units to each one with the same tariff. The central telephone point, cation with Moscow, Leningrad, and Kiev. Contact with these cities is accomplished by dialing digit 1.

It is interesting to note that when we connected our ATA unit direct-ly with the Moscow automatic telephone exchange (numbers can be dialed from this ATA unit without additional indexes) it enjoyed an especially big demand among the public. In our opinion a psychological factor affecting the subscriber plays a role in this.

Installation of ATA units in a city and at the central telephone point did not cause any difficulties. Out of 150 health resorts, however, only ten are in Yalta proper; the largest health resorts are located at a considerable distance from the city.

- 61 -

- 62 -

USSR

Biological Rhythms

MUCHNIK, S. R., Professor, and IVCHENKO, L. P., Odessa Scientific Studies
Institute of Eye Diseases and Tissue Therapy imeni Akademian V. P. Filatov

"Solar Activity and the Physiological Rhythms of Intraocular Pressure"

Abstract: Groups of rabbits were studied for physiological rhythms of intra-
ocular pressue. Group 1 was observed from December 1968 through February-
-March 1972; Group 2 was observed from April 1970 through August-September
1972. The same person tested the rabbits daily using Maklakov's 10 gr tono-meter.
More than 15,000 measurements were obtained. The highest levels of intraocular
pressure were found during December-January -- decreasing gradually to the
lowest level during May-August, followed by an increase lasting until Decen-
ber-January again. Meteorological factors such as barometric pressure, humidity
and temperature were seasonally related to intraocular pressure. Sun spots
was also connected to gradations of pressure and a direct physiological rhythm
pattern is related to solar activity.

1/1