USSR

UDC 547.241

GLADSHTEIN, B. M., ZAKHAROV, B. L., SOSINA, M. M., SPITSYN, A. A.

"Reaction of Perchloromethylmercaptan with Di- and Mono-esters of Methyl-phosphonous Acid"

Abstract: The reaction of perchloromercaptan in a dry N atmosphere with di- and mono-esters of methylphosphonous acid was studied. In the case of monoalkyl methylphosphonite at -20°, taken in an equimolar amount with perch-loromercaptan, O-alkyl methylchlorophosphonate (75% with respect to the monoalkyl methylphosphonite), thiophosgene (35% with respect to the perchloro-methylmercaptan), and a small amount of hexachlorodimethyl disulfide were studied. The diesters of methylphosphonous acid react with perchloromercaptan in different ways, depending on the order of mixing of the reagents. When the dialkyl methylphosphonite is added to perchloromethylmercaptan at -50°, O-alkyl methylchlorophosphonate, hexachlorodimethyl disulfide, and alkyl chloride were isolated. The reverse order of addition of the reagents led to the formation of O-alkyl S-tris(alkylmethylphosphonyl)-methyl methylthiophosphonate (60% with respect to the dialkyl methylphosphonite) and alkyl chloride. These results are apparently in agreement with the results obtained by other researchers.
1/1

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1/2   028   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--AUTOCLAVE FOR OPERATING WITH HIGH PURITY GASES -U-

AUTHOR-(04)-NIKIFOROV, V.P., MORGUNOV, A.V., SPITSYN, B.V., FEDOSEYEV,
D.V.
COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 535-7

DATE PUBLISHED-------70

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

TOPIC TAGS--AUTOCLAVE, VACUUM TECHNOLOGY, CHEMICAL PURITY, GAS PRESSURE

CONTROL MARKING--NO RESTRICTIONS'

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0440   STEP NO--UR/0076/70/044/002/0535/0537

CIRC ACCESSION NO--AP0121114
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0121114
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AUTOCLAVE WITH A 100 ATM
   PRESSURE RANGE AND VACUUM UP TO 1.10 PRIME NEGATIVE4 TORR IS DESCRIBED.
   A DIAGRAM IS GIVEN ON THE DEVICES USED FOR FEEDING GASES.
   FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

1/2   044   UNCLASSIFIED   PROCESSING DATE--30CCT70
TITLE--A RADIATION HEATING UNIT -U-

AUTHOR-(02)-SPITSYN, B.V., LOPATINA, G.G.

COUNTRY OF INFO--USSR

SOURCE--V SB. TEPLOFIZ. SVOVSTVA TVERDYKH TEL PRI VYSOKIKH TEMPERATURAKH.
REFERENCE--RZH-FIZIKA, NO 1, JAN 70, ABSTRACT NO 1A136MPERATURES, VOL. 1,
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HIGH TEMPERATURE R AND D, HIGH TEMPERATURE SEMICONDUCTOR,
OIELECTRIC MATERIAL, LABORATORY FURNACE, GAS DISCHARGE TUBE, TEMPERATURE
MEASUREMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0999   STEP NO--UR/0000/69/000/000/0468/0472

CIRC ACCESSION NO--AR0112159
                        UNCLASSIFIED

CIRC ACCESSION NO--AR0112159   UNCLASSIFIED   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE RADIANT ENERGY SOURCE USED ON
THIS UNIT FOR LOCAL HEATING OF SPECIMENTS OF DIELECTRICS AND HIGH
TEMPERATURE SEMICONDUCTOR MATERIALS WAS A HIGH POWER (6 KW) SUPERHIGH
PRESSURE XENON GAS DISCHARGE TUBE WHICH GIVES A STABLE TEMPERATURE OF
THE ORDER OF 2,000DEGREESC IN THE WORKING SPOT FOR SEVERAL DOZEN HOURS.
THE DESIGN OF THIS UNIT PERMITS NONCONTACT MEASUREMENT AND PROVIDES FOR
TEMPERATURE REGULATION WITH AN ERROR OF 5DEGREESC. THE HEATING IS DONE
IN A HIGHLY PURE AND CONTROLLABLE ATMOSPHERE BY PLACING THE SPECIMENT IN
A SPECIAL QUARTZ CHAMBER.

UNCLASSIFIED

USSR

SPITSYN, N. I.

"Investigation of Two-Channel Direction Finding in the Case of Noise Signals Against a Background of Noise Interference"

Abstract: A bearing is taken on a point noise source by using two spaced antennas. At the outputs of the antennas are the realizations of two normal noise processes $x(t)$ and $y(t)$ which include noise signals $s_1(t)$, $s_2(t)$, and noise interferences $n_1(t)$, $n_2(t)$:

$$x(t) = s_1(t) + n_1(t), \quad y(t) = s_1(t) + n_2(t).$$

The signal and interference are statistically independent. Segments of the realizations $x(t)$, $y(t)$ of duration T are considered. It is assumed that the statistical character-istics of the processes are invariant for time T. The spectra

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USSR

SPITSYN, N. I., Radiotekhnika i Elektronika, Vol 17, No 1,
Jan 72, pp 58-68

of the signals and interferences are identical, have an average
frequency f_0, and are uniform in the band Δf, $\Delta f T \gg 1$. Signals
$s_1(t)$, $s_2(t)$ have variances S_1, S_2 respectively, and are dis-
placed relative to one another by time $\tau_\phi = (d/c \sin \phi)$, where ϕ
is the bearing, d is the spacing between antennas, and c is
the rate of wave propagation. The mutually correlated inter-
ferences n_1, n_2 are characterized by their own variances N_1,
N_2, the generalized coefficient of mutual correlation r_n, and
the average phase difference γ. The author determines the
limiting accuracy of direction finding, and also investigates
algorithms for optimum signal processing. Four figures,
bibliography of five titles.

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UDC 543.70

USSR

TRONEVA, N. V., RENEV, V. K., SPITSYN, P. K., and ANTONOV, A. V.,
State Scientific Research and Planning Institute of the Rare Metal
Industry, Moscow, State Committee for Ferrous and Nonferrous
Metallurgy USSR

"Determination of Total Rare Earths and Yttrium in Industrial Solu-
tions by the X-Ray Absorption Method"

Abstract: The authors devised and tested experimentally a new
variant of X-ray absorption for testing industrial solutions used
in the production of rare-earth elements.

    Using a "Mineral-3" analyzer, they were able to determine
yttrium on the basis of absorption jump, and total rare earths on
the basis of the absorption coefficient for MoK$_\alpha$ -radiation.

    Data thus obtained did not differ by more than 3 - 5% from
those obtained with the usual chemical means. The new method is
equally advantage of being more rapid than the chemical method.
1/1

- 6 -

1/2   024   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--DETERMINATION OF THE AMOUNT OF RARE EARTH ELEMENTS AN YTTRIUM IN
   INDUSTRIAL SOLUTIONS BY AN X RAY ABSORPTION METHOD --U-
AUTHOR-(04)-TRONEVA, N.V., RENEV, V.K., SPITSYN, P.K., ANTONOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 378-80

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--X RAY ABSORPTION, RARE EARTH COMPOUND, YTTRIUM, SOLUTION
   CONCENTRATION, NITRIC ACID, SOLUTION ACIDITY, X RAY ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1878   STEP NO--UR/0075/70/025/002/0378/0380

CIRC ACCESSION NO--AP0115697
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0115697   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW MODIFICATION OF THE X RAY
ABSORPTION METHOD FOR THE ANAL. OF INDUSTRIAL SOLNS., INTERMEDIATES OF
RARE EARTH PRODUCTION, WAS DEVELOPED. THE METHOD PERMITS THE USE OF A
SINGLE INSTRUMENT TO DET. THE TOTAL CONTENT OF THE RARE EARTH BY THE
ABSORPTION COEFF. OF THE MO TARGET IRRADN. AND THAT OF Y BY THE
ABSORPTION JUMP. IN HNO SUB3 SOLNS., PH HAS NO EFFECT ON THE SHAPE OF
THE CALIBRATION GRAPH.

PROCESSING DATE--13NOV70

UNCLASSIFIED

USSR

CHUVAYEV, V. F., SHINIK, G. M., POLOTEBNOVA, N. A., SPITSYN, V. I., Academician, Institute of Chemical Physics, Soviet Academy of Sciences, Moscow

UDC 546.78+541.452+546.212

"Investigation of Crystal Hydrates of Phosphotungstovanadic Heteropoly Acids by the Paramagnetic Resonance Method"

Abstract: The paper gives the results of an investigation of the PMR spectra of hydrates of various water content of phosphotungstovanadic heteropoly acids with one or two atoms of vanadium in the anion $H_4[PW_{11}VO_{40}] \cdot nH_2O$ and $H_5[PW_{10}V_2O_{40}] \cdot nH_2O$. Specimens of acids with intermediate water content were produced by allowing the initial high-water crystals to stand in air for different durations at different temperatures. The PMR spectra show specific peculiarities of the hydrate structure of phosphotungstovanadic heteropoly acids with one and two vanadium atoms. The nature of dehydration of the H^+ ions in acid $H_5[PW_{10}V_2O_{40}] \cdot H_2O$ supports the hypothesis of formation of a four-spin grouping $H_4O_2^+$. In the hydrates $H_4[PW_{11}VO_{40}] \cdot H_2O$ and $H_5[PW_{10}V_2O_{40}]2H_2O$ the proton-proton distance of the water molecules $r_{H-H} = 1.8$ Å is considerably greater than the usual distances in crystal hydrates.

1/1

Polymers and Polymerization

USSR   UDC 542.955:546.27'161:547.1'118:678.643'42'5:678.043

SADYKOVA, E. M., CHELNOKOVA, Z. B., KOLLI, I. D., RODIONOV, P. A., and
SPITSYN, VIKT. I., Moscow State University Imeni M. V. Lomonosov

"Addition Products of Boron Trifluoride With Phosphines as Reinforcement
Agents for Epoxy Resins"

Abstract: Addition complexes of boron trifluoride and phosphines: P-tri-n-
-butyl-B-trifluorophosphinoboron (EPB), and P-triphenyl-B-trifluorophosphine-
boron (FPB) were used as reinforcing agents for the epoxy resin ED-5. Optimal
conditions for their use were as follows: 25 parts by weight of the complex
per 100 of the resin, temperature -- 150°C, duration of the process -- 12 hrs.
The products obtained showed excellent durability even at elevated tempera-
tures, improved fire-retardant properties, and excellent light transmission.
Infrared spectra of the products were studied and on their basis it was shown
that the reactions involved in above processes go in two directions: reaction
of the complex with the oxygen of the epoxide group leading to the formation
of a phosphine ion which then acts as a stabilizer towards oxidative degrada-

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USSR

SADYKOVA, E. M., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72, pp 786-790

tion, and a reaction of the complex with the hydroxyl group oxygen in presence of air; this leads to a reduction of the number of hydroxyl groups in the reinforced product and binding of the air oxygen, so that the degradation is slowed down and the transparency of the product is improved.

2/2

Polymers and Polymerization

KABANOV, V. YA., CHALYKH, A. YE., ALIYEV, R. E., LUK'YANOVICH, V. M., and SPITSYN, V. I., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow

"Electron Microscope Study of Charge Centers in γ-Irradiated Polymers"

Abstract: Investigation of the charge on polymers as a function of radiation was performed. The IR spectra of the unirradiated polyethlene films show no evidence of polarized acid groups. Samples were irradiated for about 0.5 minutes at 30 rads/sec from a Co^{60} source. The irradiation produced surface patterns on the films which were then studied under the electron microscope. Fourteen of the electron micrographs are reproduced in the article. Surface patterns were not obtained on the surfaces when the plastics were treated in the form of metal organosols. The charged centers retain their charge when the films are submerged in a medium with a high dielectric constant, such as water. Thus the charged centers are fixed and the topography of particular distributions which is significant in studying the effects of radiation is preserved.
1/1

USSR

SPITSYN, V. I., Academician, MOSHCHANSKAYA, N. G.

UDC 541.28+541.8

"Radiochemical Hydrolysis of Radioactive Cerium Oxalate"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 2, 1972, pp 388-390

Abstract: When dissolving cerium oxalate tagged simultaneously on the cation and the anion in water, the ratio of the solubility determined by means of $Ce^{144}(L_1)$ and the solubility determined by $C^{14}(L_2)$ varies with an increase in the specific radioactivity of the investigated compound and as a function of the radiation energy of the radioactive isotope [N. G. Moshchanskaya, V. I. Spitsyn, DAN, Vol 175, 642, 1967]. The magnitude of the solubility determined by C^{14} is higher than that measured by $Ce^{144}(L_2/L_1 > 1)$. A further study was made of the process of the solution of radioactive cerium oxalate tagged by two radioactive indicators (Ce^{144} and C^{14}) in water an in 0.01 N HCl. Radio-chemical hydrolysis occurs only when dissolving the cerium oxalate in water. This process is intensified with an increase in temperature and takes place with the formation of low-soluble cerium hydroxy complexes. In an acid medium, the reaction becomes reversible, and hydrolysis of the radioactive cerium oxalate does not take place in practice. Under the experimental conditions, the phenomenon of radiolysis of the oxalate ion was not observed.
1/1

USSR   Water Treatment

SPITSYN, V. I., GLAZUNOV, M. P., MULYAR, V. M., DERYAGIN, B. V., CHURAYEV,
N. V., and ZORIN, Z. M., Institute of Physical Chemistry Academy of Sciences
USSR, Moscow

UDC 543.123.11+532.74

"Study of the Anomalous Water by the Method of Neutron Activation Analysis"

Moscow, Doklady Akademii Nauk SSSR, Vol 202, No 1, Jan-Feb 72, pp 132-135

Abstract: Samples of anomalous water were studied for their content of admix-
tures which could possibly be leached out of the glass; particularly Si and Na,
after irradiation with thermal neutrons. As a preliminary experiment quartz
glass itself was examined. The Na impurities were found to be low, and irre-
gularly distributed throughout the capillary. The anomalous water samples were
compared to double distilled water. It was established that the admixture
concentration was much higher in the anomalous samples than in the double
distilled material. The content of Si and Na was inversely proportional to the
volume of the sample studied. This could be due to the evaporative procedures
used, the impurities being introduced from the surface layer of the capillaires,
from the evaporation equipment, etc. Temperature doesn't seem to have any
particular effect on the content of imputities. The quantity of the anomalous
components in the samples of anomalous water varied in the range of $5 \cdot 10^{-3}$ to
$5 \cdot 10^{-8}$ g.
1/1

Transformation and Structure

USSR

UDC: 546.3-19 + 546.56 + 546.681

SKYARENKO, I.YA., PRISELKOV, YU.A., ZIMAKOV, I.YE., MATERN, G., SAPOZHNIKOV, YU.A., TSEPLYAYEVA, A.V., and SPITSYN, V.I., Institute of Physical Chemistry, Moscow Academy of Sciences USSR, and Moscow State University imeni M. V. Lomonosov, Moscow Ministry of Higher and Secondary Specialized Education USSR

"Evaporation of the Copper-Gallium Alloy in the Field of Phase Transformations"

Abstract: Partial vapor pressures of copper and gallium were determined over copper-gallium (15.5 at-%) alloy in the temperature interval 1171-1395°K. Experimental data plotted as log p vs the inverse temperature show that the functions are not linear, but complex curves with many extrema, exceeding considerably any possible experimental error. The partial pressure curve of gallium exhibited such anomalies much more than did copper and they appeared in liquid, heterogeneous, and solid phases. In the fusion process the partial pressure of copper vapor was noticed to drop. Contrary to some reported data, radioactivity did not affect markedly the behavior of copper vapor, except that the rate of the drop in partial pressure of copper vapor was increased. On the basis of differential-thermal analysis, phase conversions were determined to take place at: 1256±3°K, 1196±3°K, 1299-3°K, and 1236-3°K. The authors thank N.G. Savostina for participating in the research.

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USSR

UDC 546.224

BELYAKOVA, L. D., KISELEV, A. V., MIKHAYLENKO, I. Ye., SOLOYAN, G. A., and SPITSYN, V. I., Academician

"Gas-Chromatographic Study of the Effect of Radioactive Radiation and Heat Treatment on the Adsorption Properties of Magnesium Sulfate"

Abstract: The procedure and results of a gas-chromatic study of the effect of radioactivity and heat treatment on the adsorption properties of magnesium sulfate are presented. The initial magnesium sulfate samples contained about 1% water, and the variation of their adsorption properties with respect to n-hydrocarbons and benzene as a result of the removal of this water during calcination was studied. Curves are presented for the retained volumes of n-nonane and benzene as a function of the calcining time of $MgSO_4$ at 400° and 500°C and the ratios of the retained volumes of benzene measured at a column temperature of 245° to n-nonane (column temperature 200°) as a function of the calcining time of $MgSO_4$. It was found that radioactive samples of sulfates containing SO_4^{2-} ions with S^{35} exhibit appreciably stronger adsorption of hydrocarbons, the molecules of which belong to group B (containing high-bonds)
1/2

USSR

and to group A (containing only σ-bonds) by comparison with nonradioactive sulfates. Removal of water during calcining increases the adsorption of both groups of hydrocarbons. The specificity of molecular adsorption of aromatic hydrocarbons, which reaches a maximum after calcining at 400° for 5 hours, increases especially sharply.

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USSR

SPITSYN, V. I., KUZINA, A. F., TSARENKO, A. F., OBLOVA, A. A., BALAKHOVSKIY,
O. A., KODOCHIGOV, P. N., GLAZUNOV, M. P., and KAYIM, I. V.

"Synthesis of Metallic Technetium and its Physical Investigations"

Abstract: Highly pure metallic technetium in the form of a silver-gray poder or compact metal (regulus) was produced from tetraphenylarsonium pertechante $(C_6H_5)_4AsTcO_4$ by hydrogen reduction in an electric furnace. The resultant material showed superconductivity with a critical point of $8.2^\circ K$. A study of the technology for producing the metal from the initial pertechnate showed that technetium dioxide is produced after one hour in a hydrogen atmosphere at $260^\circ C$, and the metal is produced at a temperature of $1000^\circ C$. X-ray structural analysis revealed that metallic technetium has a hexagonal lattice with dense atomic packing of the magnesium type, the lattice parameters being $a = 2.74\pm0.005$ and $c = 4.41\pm0.005$; $c/a = 1.609$. The radiometric and neutron activation methods of analysis showed extremely minute quantities of trace impurities: $Ru--10^{-8}$, $Rh--10^{-14}$, $Al--10^{-5}$, $Na--10^{-3}$ and $As--10^{-3}$ gm per gm of technetium. Within the limits of sensitivity of the neutron activation method, no other impurities were detected.

1/1

USSR

UDC: 541.1+669.225+660.48.5+539.16

SKLYARENKO, I. YA., MALININ, G. F., PRISELKOV, YU. A., ZIMAKOV, I. YE.,
and SPITSYN, VIKT. I., Department of Radiochemistry, Moscow State
University; Institute of Physical Chemistry, Academy of Sciences USSR

"Vaporization of Silver Under Beta-Irradiation of the Evaporating Surface"

Abstract: A number of earlier papers have been devoted to the effect of
both external and internal irradiation on the vaporization of various
substances. Most investigations, however, were conducted under conditions
of inadequately high vacuum and in atmospheres of residual gases which,
combined with radiation, could have had specific effects on the metal's
surface. The objective of this study was vaporization of pure silver
under ß-irradiation of its surface under high vacuum of $1 \cdot 10^{-8}$–$5 \cdot 10^{-9}$ tor.
The irradiation source was an equilibrium mixture ${}^{90}Sr-{}^{90}Y$ applied by

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USSR

SKLYARENKO, I. YA., et al, Vestnik Moskovskogo Universiteta, Serija II.
Khimiya, no. 6, vol. 11, Nov-Dec 70, pp 737-739

sintering, in the form of strontium oxide, to the inner surface of the
ceramic cover of the Knudsen chamber. The radiation dosage was 32 rad/sec.
The measurements were made by a device designed for determining vapor
pressure by effusion. The effusive flow was measured by a specially
equipped mass spectrometer (omegatron) calibrated for silver within 13%
to 1137°C. Vacuum was produced by a heteroionic titanium pump. The basic
components of residual gases were CO, H_2 and a small amount of H_2O. The
effusion chamber proper was made from alundum which was inert to silver.
The experimental data and the derived equations show that the employed
strength of β-irradiation of silver under conditions of high-vacuum and
surface purity had hardly any effect on the process and kinetics of
vaporization.

1/2   023

UNCLASSIFIED

TITLE--CHROMATOGRAPHIC BEHAVIOR OF PERTECHNATE ION ON RESINS OF VARYING BASICITY -U-

PROCESSING DATE--23OCT70

AUTHOR-(04)-SPITSYN, V.I., OBLOVA, A.A., KUZINA, A.F., GALITSKAYA, N.B.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1151-4 (PHYS CHEM)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHROMATOGRAPHY, TECHNETIUM COMPOUND, ION EXCHANGE RESIN, CHEMICAL LABELLING, ISOTOPE, PYRIDINE, POLYMER, SOLUTION ALKALINITY, DISTRIBUTION COEFFICIENT/(U)AV17 ION EXCHANGE RESIN, (U)AV22 ION EXCHANGE RESIN, (U)AN40 ION EXCHANGE RESIN, (U)AN25 ION EXCHANGE RESIN, (U)AN23 ION EXCHANGE RESIN, (U)AN41 ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1587

STEP NO--UR/0020/70/190/005/1151/1154

CIRC ACCESSION NO--AT0116995

UNCLASSIFIED

023

CIRC ACCESSION NO--AT0116995

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISTRIBUTION COEFFS. (KAPPA) WERE DETD. OF TCO SUB4 PRIME NEGATIVE BETWEEN ION EXCHANGE RESINS AND WATER AT 1-8 OR 1-13 PH RANGES FOR WEAKLY BASIC OR STRONGLY BASIC RESINS, RESP. KAPPA WAS DETD. BY LABELLING THE SOLNS. WITH PRIME99 TC PRIMEM 0 SUB4 PRIME NEGATIVE AND BY MEASURING THE RADIOACTIVITY OF THE RESINS AND THE ELUANT, RESP. (RESIN, OPTIMUM PH, MAX. KAPPA TIMES 10 PRIME3 GIVEN): AV-17 (MODIFIED STYRENE DIVINYLBENZENE COPOLYMER), 8.0, 25; AV-22 (AS ABOVE), 8.0, 10; AN-40 (4,VINYLPYRIDINE,DIVINYLBENZENE COPOLYMER), 4.2, 3.5; AN-25 (2,METHYL,5,VINYLPYRIDINE,DIVINYLBENZENE COPOLYMER), 4.2, 2.1; AN-23 (2,VINYLPYRIDINE,VINYLBENZENE COPOLYMER), 4.0, 0.9; AN-41 (5,ETHYL,2,VINYLPYRIDINE,VINYLBENZENE COPOLYMER), 3.1, 0.7. THE INCREASED SEPN. BETWEEN THE PYRIDINE N AND THE POLYMER CHAIN GAVE LOWER KAPPA VALUES.

PROCESSING DATE--23OCT70

1/2   011
UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--COMPOSITION AND STABILITY OF A MIXED COMPLEX FORMED BY NEODYMIUM
WITH EHTYLENEDIAMINETETRAACETIC AND TARTARIC ACIDS -U-

AUTHOR-(04)-DOBRYNINA, N.A., MARTYNENKO, L.I., AGEYEVA, L.V., SPITSYN,
V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 477-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COMPLEX COMPOUND, NEODYMIUM COMPOUND, ETHYLENEDIAMINE, ACETIC
ACID, TARTARIC ACID, SPECTROMETRIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0647   STEP NO--UR/0062/70/000/002/0477/0479

CIRC ACCESSION NO--AP0119559
                    UNCLASSIFIED

2/2   011
CIRC ACCESSION NO--AP0119559   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   SPECTROMETRIC STUDY OF THESE
SYSTEMS OF NDCL SUB3 IN VARIOUS PROPORITONS SHOWED THAT A MONOTARTRATE
OF ND WITH FORMULA NDZ PRIME POSITIVE IS FORMED, THE PK OF STABILITY
CONST. BEING 4.66.   IN A SYSTEM CONTG. TARTARIC ACID (H SUB2 Z) AND THE
DI-NA SALT OF EDTA (H SUB4 A), A MIXED COMPLEX IS FORMED WITH COMPN. OF
NDAZ PRIME3 NEGATIVE AND STABILITY CONST. 1.03 TIMES 10 PRIME2.
FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   011
UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--SPECTROGRAPHIC STUDY OF NEODYMIUM CITRATES IN AN AQUEOUS SOLUTION
-U-

AUTHOR-(03)-ARTYUKHINA, G.A., MARTYNENKO, L.I., SPITSYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 522-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NEODYMIUM COMPOUND, CITRIC ACID, SPECTROSCOPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1510
                                    STEP NO--UR/0062/70/000/003/0522/0525

CIRC ACCESSION NO--AP0120291
                    UNCLASSIFIED

2/2   011
CIRC ACCESSION NO--AP0120291   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   SPECTROGRAPHIC AND POTENTIOMETRIC
PROCESSING DATE--23OCT70
DATA WERE USED TO REVEAL 2 FORMS OF CITRATES OF COMPN. ND(CIT), ND(CIT)
SUB2 PRIME3 NEGATIVE AND ND SUB3 (CIT) SUB3 (OH) SUB4 PRIME4 NEGATIVE IN
TITRN. OF NDCL SUB3 WITH CITRIC ACID (H SUB3 CIT).   THE MONOCITRATE HAS
A STABILITY CONST. THAT RANGES FROM 1.13 TIMES 10 PRIME8 TO 0.67 TIMES
10 PRIME8 WHEN THE CONCN. OF NDCL SUB3 IS VARIED FROM 0.03M TO 0.005M.
FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED

TITLE--EFFECT OF CITRIC ACID ON THE EXCHANGE BY RARE EARTH IONS BETWEEN A
   CATION EXCHANGER AND A SOLUTION OF ETHYLENEDIAMINETETRAACETIC ACID, EDTA

PROCESSING DATE--20NOV70

AUTHOR-(03)-MARTYNENKO, L.I., SPITSYN, V.I., ARTYUKHINA, G.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(4), 931-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CITRIC ACID, RARE EARTH METAL, CATION EXCHANGE RESIN,
   NEODYMIUM, PRASEODYMIUM, HOLMIUM/(U)KU2 CATION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/2018

STEP NO--UR/0078/70/015/004/0931/0934

CIRC ACCESSION NO--AP0132279

UNCLASSIFIED

CIRC ACCESSION NO--AP0132279   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. DISTRIBUTION COEFFS. (ALPHA) FOR
ND-PR AND ER-HO MIXTS. WERE DETD. IN A SYSTEM OF CATION EXCHANGE RESIN
KU-2 WITH EDTA, CITRIC ACID (H SUB3 CIT), OR THEIR MIXTS. IN THE
PRESENCE OF H SUB3 CIT, THE VALUE OF ALPHA REACHES ITS HIGHEST (EQUIL.)
VALUE VERY QUICKLY. IN EDTA SOLN., THE EQUIL. WAS REACHED MORE SLOWLY.
FAVORABLE DIFFUSIONAL PROPERTIES OF CITRATES ARE RESPONSIBLE FOR FASTER
ACHIEVEMENT OF EQUIL. IN H SUB3 CIT THAN IN EDTA SOLNS. IT IS ASSUMED
THAT, IN EDTA-H SUB3 CIT AND IN H SUB3 CIT SOLNS., THE RATE DETG. STEP
IS THE SAME AND IT INVOLVES PENETRATION OF NEUTRAL COMPLEXES (WHICH FORM
AT PH3-3.2) INTO THE RESIN. FACILITY: MOSK. GOS. UNIV. IM.
LOMONOSOVA, MOSCOW, USSR.

PROCESSING DATE--20NOV70

UNCLASSIFIED

1/2   012

UNCLASSIFIED

TITLE--POSSIBLE USE OF GLYCINATE COMPLEXES FOR SEPARATING A NEODYMIUM PRASEODYMIUM MIXTURE ON A CATION EXCHANGER -U-

PROCESSING DATE--27NOV70

AUTHOR-(03)-ELKHILYALI, A.E., MARTYNENKO, L.I., SPITSYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 517-21

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NEODYMIUM, PRASEODYMIUM, RARE EARTH COMPOUND, GLYCINE, ION EXCHANGE, CATION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0288

CIRC ACCESSION NO--AP0124047

STEP NO--UR/0062/70/000/003/0517/0521

UNCLASSIFIED

CIRC ACCESSION NO--AP0124047   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELUTION OF RARE EARTHS FROM CATION EXCHANGE RESIN WAS STUDIED; THE USE OF AQ. GLYCINE FOR ELUTION IS UNSATISFACTORY AS THIS AMINO ACID FORMS COMPLEXES WITH THE RARE EARTHS AND THE RESIN WHICH ARE NOT DESORBED. SEPN. OF RARE EARTHS ALSO CANNOT BE DONE WITH GLYCINE ELUTION IN THE TECHNIQUES OF FRONTAL ANAL.   THE EXCHANGE BETWEEN COMPLEXES IN THIS CASE DOES NOT OCCUR IN SOLN. OR ON THE RESIN OWING TO UNFAVORABLE KINETIC FACTOR AND THE SEPN. OF RARE EARTHS APPROACHES ZERO REGARDLESS OF VALUES OF STABILITY CONSTS. OF THE COMPLEXES OF NEIGHBORING RARE EARTHS INVOLVED.   FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   009   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--DETERMINATION OF TRACE AMOUNTS OF CEIUM BY REPEATED ISOTOPIC
  DILUTION WITH CESIUM 137 WITHOUT A CARRIER -U-
AUTHOR-(03)-POMERANTSEVA, A.V., ZIMAKOV, I.YE., SPITSYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER KHIM. 1970, (1) 3-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ISOTOPE, CESIUM MICROCHEMICAL ANALYSIS, SOLVENT EXTRACTION,
  QUALITATIVE ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1938/0586   STEP NO--UR/0062/70/000/001/0003/0007

CIRC ACCESSION NO--AP0105569
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0105569   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE ISOTOPE DILN. TECHNIQUE WAS   PROCESSING DATE--18SEP70

USED SATISFACTORILY FOR DETN. OF PRIME137 CS IN MICROQUANTITIES WITHOUT
THE USE OF A CARRIER.   THE ISOLATION OF CS WAS DONE BY EXTN. IN THE
SYSTEM OF MG DIPICRYLAMINATE AND PHNO SUB2 IN 0.02N NAOH SOLN.   THE
EXTN. WAS SUBSTANTIALLY COMPLETE FOR 100-1000 MUG CS IN THE SAMPLE.   THE
EXT. IN PHNO SUB2 REQUIRED SOME 20 MIN FOR THE ACTUAL EXTN.   FOR CONCN.
OF 1-10 MUG CS-ML NO MORE THAN 3-5 INDEPENDENT DILNS. ARE NEEDED FOR
OBTAINING DEPENDABLE DATA.   THE METHOD INSURES DETN. OF PRIME137 CS WITH
MEAN ERROR OF SMALLER THAN OR EQUAL TO 2.5PERCENT.

UNCLASSIFIED

USSR

UDC: 621.039.553.3

LAPTEV, N. YA., SPITSYN, V. I., and BALEZIN, S. A., Institute of Physical
Chemistry, Academy of Sciences USSR

"Dissolution of Neutron-Irradiated Iron and Steel"

Abstract: A comparative study of the dissolution of radioactive and nonradio-
active specimens of Armco-iron and 45-steel in acid solutions was carried
out. Crystal lattice defects caused by neutron irradiation accelerate metal
dissolution in acid, and the dissolution rate for radioactive specimens is
slightly greater. The occurrence of a positive charge in the presence of oxide
films or insoluble corrosion products is one of the factors responsible for
inhibiting the corrosion of the β-radioactive metal. Saturated calomel was
used as the comparison electrode.

1/1

014

UNCLASSIFIED

TITLE--REACTION OF DIHYDROXYDICYANODIAMMINEPLATINUM WITH NITRIC, SULFURIC, AND PERCHLORIC ACIDS AT 25 AND 50DEGREES -U-

PROCESSING DATE--23OCT70

AUTHOR-(02)-ATAMANOV, D., SPITSYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 456-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PLATINUM COMPLEX, POTENTIOMETRIC TITRATION, NITRILE, AMMONIA, HYDROXYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1977

CIRC ACCESSION NO--AP0123758

STEP NO--UR/0062/70/000/002/0456/0459

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0123758
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POTENTIOMETRIC TITRN. DATA WERE
REPORTED IN TABULAR FORM FOR THE TREATMENT OF PT(NH SUB3) SUB2 (OH) SUB2
(CN) SUB2 WITH HNO SUB3, HCLO SUB4, AND H SUB2 SO SUB4 AT 25 AND
50DEGREES AT VARIOUS CONCNS. THE APPARENT DISSOCN. CONSTS. OF THE
COMPLEXES ARE TABULATED FOR THESE TEMPS. AT 25DEGREES THE SUCCESSIVE
DISSOCN. ACID CONSTS. WERE PK SUB1 2.95 AND PK SUB2 2.50, WHILE AT
50DEGREES THESE WERE 2.77 AND 2.44, RESP., FOR THE (PT(NH SUB3) SUB2
(CN) SUB2 PRIME POSITIVE (H SUB2 O)) PRIME2 POSITIVE AND (PT(NH SUB3)
SUB2 (CN) SUB2 (HO)(H SUB2 O)) PRIME POSITIVE FORMED BY SUCH ACID TITRN.
ANAL. OF THE SCATTER OF THE RESULTS SHOWED THAT THE PK VALUES ARE NOT
AFFECTED BY THE CONCN. OF THE COMPLEX OR THE NATURE OF THE ACID USED.
THUS NO NITRATO, PERCHLORATO, OR SULFATO COMPLEXES OR POLYNUCLEAR COMPDS
ARE FORMED. THE SCATTER OF THE PLOTTED TITRN. VALUES IS SHOWN.
FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

PROCESSING DATE--23OCT70

UNCLASSIFIED

USSR

CHERNYSHEV, G. G.,and SPITSYN V. V. (Candidates of Techn. Sciences)

UDC 621.791.042.3.01

"Certain Technological Characteristics of Powder Wire in Open-Arc Welding"

Moscow, Svarochnoye proizvodstvo, No 5, May 72, pp 21-23

Abstract: The study deals with changes in productivity of open-arc hard facing and weld joint dimensions as a function of operating parameters involving the use of PP-1DSK, PP-2DSK, PP-AN-7,and EPS-15/2 powder wire, 1.8, 2.3, 2.9,and 2.3 mm in diameter, respectively. Reverse-polarity direct current was used for both welding and hard facing. The pro- ductivity of hard facing is shown to increase with current for all filler wire grades and is also a function of both the diameter and cross-sectional area of the wire. Single-pass welding under optimum conditions produces satisfactory weld shapes. Except for the PP-AN7 wire, all grades featured small depths and areas of fusion. In multilayer butt welding the best results were obtained by PP-2DSK wire, while the other grades showed occasional defects in the form of pores and slag inclusions. Also included in the study are U-corner joints and welds produced with electrodes at a 45° angle. (4 illustrations, 1 table, 3 bibliographic references) 1/1

USSR

SPITSINA, L. N.

UDC: 911.3.616.831-002.576.895.42(470.51)

"The Immunological Structure of the Population in Foci of Tick-Borne Encephalitis"

V sb. Materialy XV Vses. s'ezda epidemiologov, mikrobiologiv i infektsionov, tezisky dokl. Ch. 2 (Proceedings of the 15th All Union Conference of Epidemio-logists, Microbiologists, and Specialists in Infectious Disease, Thesis Reports Part 2) Moscow, 1970, pp 216-217 (from RZh-36. Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.87 by V. Maslovskaya)

Translation: Over the course of four seasons (1965-1968), sero-epidemiological research was conducted on 30-50% of the population in foci of tick-borne encepha-litis in 12 rayons of the Udmurt ASSR. These rayons were characterized by un-even levels of disease incidence and varying degrees of vaccination coverage of forest areas frequented by local inhabitants. Blood sera of 6,139 local inhabi-tants were studied in the reaction of hemagglutination inhibition. The sero-epidemiological study in N. Udmurt rayons revealed indices of an immunological layer in the population that varied from 10.1 ± 2.0 to $35.5 \pm 4.2\%$. Comparison of this data with official records of the incidence of tick-borne encephalitis

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USSR

SPITSYNA, L. N., V sb. Materialy XV Vses. s'ezda epidemiologov, mikorbiologiv i infektsionov, tezisky dokl. Ch. 2 (Proceedings of the 15th All Union Conference of Epidemiologists, Microbiologists, and Specialists in Infectious Disease, Thesis Reports Part 2) Moscow, 1970, pp 216-217 (from RZh-36. Meditsinskaya geografiya, No 1, Jan 71, Abstract No 1.36.87 by V. Maslovskaya)

established that for every one clinical case there are from 360 to 4,345 latent forms that are revealed only through serological testing of the population. The inhibitory effect on the disease process was only observed when the immunological layer reached 35%.

2/2

USSR

GVOZDOVER, R. S., LUK'YANOV, A. YE., SPIVAK, G. V., RAU, E. I.,
BYKOV, M. V.

"Electron Microscopy of Periodic Piezoelectric Fields"

Abstract: This article discusses problems in the formation of
the image field contrast varying periodically with time, computes
the amplitudes of the piezoelectric fields producing the contrast
on the screen of a mirror or raster electron microscope, and
describes an experimental method for visualizing and measuring
these piezoelectric fields. The piezoelectricity in question
takes place on the surfaces of crystals under the action of ultra-
sonics, a phenomenon often investigated by electron microscopes
stroboscopically operated. The results of experiments performed
on crystals of quartz, lithium niobate -- LiNbO3, and cadmium
sulfide (CdS) are given and the ultrasonic delay lines from the
quartz and LiNbO3 crystals investigated. Gratitude is expressed
to V. Ye. Lyamov for his useful comments on some of the results
of the work.
1/1

USSR

UDC 539.37.376

ANDRIYEVSKIY, R. A., SPIVAK, I. I., and KLIMENKO, V. V.

"Manifestation of Superplasticity in Refractory Compounds"

Abstract: The authors studied the possibility of the manifestation of super-
plasticity in two-phase composites based on refractory compounds. The sys-
tems VC-ZrC, VC-HfC and TiC-ZrC were selected for this purpose. Specimens
were prepared by hot forming with subsequent annealing at 2500° C; porosity
of the VC-ZrC, VC-HfC, TiC-ZrC composites was respectively 1.5-3, 8-15, 4-6
percent; the testing procedure consisted in studying bend creep. The re-
sults indicate that many of the regularities found in studying the super-
plasticity of metallic alloys (nonlinear relation between creep rate and
σ, the manifestation of superplasticity in two-phase alloys whose phase
volumes are equidimensional, and the size of inclusions amounting to several
microns) are also observed in the case of carbide composites.

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USSR

MASTRYUKOVA, T. A., SPIVAK, L. L., GRIGOR'YEVA, A. A., URZHUNTSEVA, Ye. K.,
and KABACHNIK, M. I., Institute of Organoelemental Compounds, Academy of
Sciences USSR, Khar'kov State University

UDC 541.67:547.26'118

"Ionization Constants of Dithiophosphoric Acids in Absolute Ethanol"

Abstract: Measurements were made of the ionization constants of organic
dithiophosphoric acids in absolute ethanol. There exists a linear relation-
ship between the ionization constant values of acids and $\Sigma\sigma_\phi$ of the
substituents at the phosphorus atom. It is shown that the conditions
for the solvation of molecules and anions of dithiophosphoric acids in
100% ethanol markedly differ from those in 7 and 80% aqueous ethanol. In
switching from 7 to 80% ethanol, ΔpK_a remains constant for all acids under
study. In 80 to 100% ethanol, ΔpK_a changes and increases from dialkyl-
dithiophosphoric to dithiophosphonic and dithiophosphinic acids. In the
former case, ΔpK_a depends largely on changes in the solvation energy of
molecules while in the latter case, it depends on that of ions. The
difference in the change of the solvation energy of ions and molecules
results from the differentiating action of the solvent on the strength of
1/2.

USSR

the acids. In the present case alcohols appear to have the highest differentiating action on the strength of dithiophosphoric acid. The difference between the strength of dithiophosphoric acids in alcohol and that in aqueous alcohol is close to 2.5 orders of magnitude.

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UDC 577.4

USSR

SPIVAK, M. A.

"Theory of Multiple Experiments with Automata"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Mos-
cow, Nauka Press, 1972, pp 196-200 (from RZh-Kibernetika, No 7, Jul 72,
Abstract No 7V363)

No abstract

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USSR

SPIVAK, M. A.,

"Introduction to the Abstract Theory of Automata"

Vvedeniye v Abstraktnuyu Teoriyu Avtomatov [English Version Above], Saratov University Press, 1970, 109 pages (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V412 K).

NO ABSTRACT.

1/1

USSR   UDC   621.317.8

SPIVAK, N. D., STARUSH, E. G., TSETENS, V. P.

"On the Cold Resistance of Microwire Resistors Made From Nickel-Based
Alloy"

V sb. Mikroprovod i pribory soprotivl. (Microwire and Resistance Devices
--collection of works), vyp. 7, Kishinev, 1971, pp 147-152 (from RZh-
-Radiotekhnika, No 8, Aug 71, Abstract No 8V354)

Translation: In order to determine the effect which repeated cold
cycles have on resistors made from M94 and M95 nickel-base alloys de-
veloped by Ye. Ya. Badinter and A. L. Gadolin, they were cooled to a
temperature of -60°C and held at this temperature for 4 hours. It was
found from the results of the tests that resistors based on these alloys
are 10-20 times as resistant to cold as similar resistors made from
manganin microwire, which is extensively used for making microwire
resistors. At the same time, the stability of "M" resistors with
respect to climatic and mechanical effects is on a level with that of
type MVSG resistors made from manganin-based microwire. Bibliography
of three titles. Ye. M.
1/1

USSR

UDC   621.3.049.73

SPIVAK, O. S.
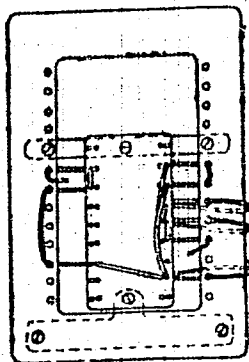
"A Method of Wiring Radio Circuits"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 7, Mar 71, Author's Certificate No 295218, Division H, filed 30 Oct 67,
published 4 Feb 71, pp 172-173

Translation: This Author's Certificate introduces a method of wiring radio
circuits. The procedure is based on separate manufacture of a contact plate
carrying the wiring leads and a plate carrying the circuit components, and
then interconnecting these plates. As a distinguishing feature of the
patent, the reliability of the joints is improved and the wiring process
is simplified by passing the wiring leads through holes in the contact
plate, putting them under tension during the wiring process (e. g. by means
of a frame around the contact plate), and then after this place has been
mechanically connected to the plate carrying the circuits components, cut-
ting off the wiring leads around the inside of the frame, electrically con-
necting these wires to the circuit component leads, and finally trimming
the wires around the interconnected plates.

1/2

USSR

SPIVAK, O. S., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye
znaki, No 7, Mar 71, Author's Certificate No 295218, Division H, filed 30 Oct
67, published 4 Feb 71, pp 172-173

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UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--USE OF CHEBYSHEV'S EQUALIZATION METHOD TO CONSTRUCT A KINETIC MODEL
   OF A COMPLEX CHEMICAL REACTION -U-
AUTHOR-(03)-SPIVAK, S.I., TIMOSHENKO, V.I., SLINKO, M.G.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 192(3), 580-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHOSPHATE, CHEMICAL REACTION, CATALYST, CHEMICAL KINETICS,
   OXYGEN, HYDROGEN, CARBON MONOXIDE, CARBON DIOXIDE, BUTADIENE,
   DEHYDRATION, CHROMIUM COMPOUND, POTASSIUM COMPOUND, NICKEL COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1232   STEP NO--UR/0020/70/192/003/0580/0582

CIRC ACCESSION NO--AT0138244
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0138244

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRINCIPLES OF THE CHEBYSHEV
EQUALIZATION METHOD FOR CONSTRUCTING A KINETIC MODEL OF A COMPLEX CHEM.
REACTION ARE OUTLINES MATH.   TO CHECK THE APPLICABILITY OF THE
CHEBYSHEV METHOD, EXPTL. RESULTS ON THE KINETICS OF THE OXIDATIVE
DEHYDRATION OF N,BUTYLENE WERE ANALYZED. THE PROCESS WAS CARRIED OUT ON
A CR-K-NI PHOSPHATE CATALYST, IN A CIRCULATORY STREAM SYSTEM, THE
PRODUCTS UNDERGOING FURTHER IRREVERSIBLE REACTIONS. THE EXPTL. RATES OF
CONVERSION OF INDIVIDUAL COMPONENTS WERE DETD. FOR N,BUTYLENE,
BUTADIENE, O SUB2, H SUB2, CO, AND CO SUB2. EQUATIONS FOR THE WHOLE
SYSTEM IN CHEBYSHEV'S TERMS WERE WRITTEN, SOME PHYS. RESTRICTIONS WERE
ADOPTED, AND THE COMPUTATIONS WERE PERFORMED. FOR COMPARISON, EXPTL.
RESULTS WERE ALSO TREATED BY THE KEY COMPONENTS METHOD (USING 6 VARIANTS
OF 4 KEY CHEMICALS) AND BY THE METHOD OF LEAST SQUARES. THE RESULTS ARE
TABULATED. THE TABLE SHOWS THAT, ACCORDING TO BOTH THE KEY COMPONENT
METHOD AND THE LEAST SQUARE METHOD, THE RATES OF CONVERSION ALONG
CERTAIN PATHS ARE NEG., WHICH IS AN ABSURD CONCLUSION FOR THESE
IRREVERSIBLE PATHS. FURTHERMORE, THE TABLE SHOWS THAT THE KEY
COMPONENTS METHOD GIVES WIDELY DIFFERING RESULTS DEPENDING ON THE CHOICE
OF KEY COMPONENTS. HOWEVER, THE RESULTS OBTAINED BY USING THE
CHEBYSHEV'S EQUALIZATION METHOD ARE POS. VALUES, REASONABLE IN
MAGNITUDE, AND CORRESPONDING PHYS. TO THE PROCESS INVESTIGATED.

TITLE--QUANTITATIVE ULTRAMICROANALYSIS OF AMINO ACIDS IN THE FORM OF THEIR
   DNS, DANSYL, DERIVATIVES. 1. APPARATUS FOR ULTRAMICROANALYSIS OF DNS

AUTHOR-(04)-SPIVAK, V.A., ORLOV, V.M., SHCHERBUKHIN, V.V., VARSHAVSKIY,
   YA.M.

COUNTRY OF INFO--USSR

SOURCE--ANAL. BIOCHEM. 1970, 35(1), 227-34

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--AMINO ACID ANALYSIS, MICROCHEMICAL ANALYSIS, LUMINESCENCE, UV
   SPECTRUM, CHROMATOGRAPHIC SEPARATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0058   STEP NO--UK/0000/70/035/001/0227/0234

CIRC ACCESSION NO--AP0119054
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0119054

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. AN APP. IS DESCRIBED THAT PERMITS
DETN. OF THE RELATIVE AMTS. FO DNS AMINO ACIDS DIRECTLY IN THE THIN
LAYER OF ADSORBANT AFTER CHROMATOGRAPHIC SEPN. THE METHOD OF
MEASUREMENT IS BASED UPON THE ABILITY OF THE DNS AMINO ACIDS TO
LUMINESCENCE IN THE VISIBLE REGION OF THE SPECTRUM AFTER EXCITATION BY
UV LIGHT.   THE AMTS. OF DNS AMINO ACIDS ON CHROMATOGRAMS MAY BE AS LOW
AS 10 PRIME NEGATIVE11 TO 10 PRIME NEGATIVE10 MOLE.   TO ILLUSTRATE THE
POSSIBILITIES OF THE PRACTICAL APPLICATION OF THE APP., THE KINETICS OF
SPLITTING OFF OF THE C TERMINAL AMINO ACIDS OF RNASE BY
CARBOXYPEPTIDASE A WAS INVESTIGATED. THE DATA ARE IN AGREEMENT WITH THE
AMINO ACID SEQUENCE IN RNASE. THUS, THE TECHNIQUE OPENS THE POSSIBILITY
OF DETG. THE TERMINAL AMINO ACID SEQUENCES IN PROTEINS AND PEPTIDES ON
AN ULTRAMICRO SCALE.   FACILITY: INST. MOL. BIOL., MOSCOW, USSR.

Communications

USSR   UDC: 621.396.2:621.371.1

VARLAMOV, G. I., DUBKOV, E. A., KOLOTYGIN, Yu. V., SPIVAK, V. B.

"Call Signal Automation for a Personal Radio Call System"

Tr. nauch.-tekhn. konferentsiy Kaluzh. obl. sovet nauch.-tekhn. c-v (Works
of Scientific and Technical Conferences. Kaluga Regional Council of Scien-
tific and Technical Societies), Kaluga, 1970, pp 73-77 (from RZh-Radiotekh-
nika, No 6, Jun 71, Abstract No 6A196)

Translation: The paper describes the structure of a module in an automatic
system for calling a certain subscriber by a combination of two frequencies
out of eight, assuming a certain sequential order of frequencies. Call
reliability is improved by multiple repetition of the signal. The princi-
pal component of the module is the subscriber identifier which is used for
setting up different combinations of controlling signals corresponding to
subscriber numbers. According to the signal given by the subscriber iden-
tifier, a call signal oscillator unit generates the call signal. The
figures of merit are given for the circuits of various elements in the
module. Three illustrations. N. S.

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USSR   UDC 621.375.4

YUDIN, YE. YE., TRIFONYUK, V. V., SPIVAK, V. M.

"Internal Feedback in Transistor Cascade Amplifiers"

Vestn. Kievsk. politekhn. in-ta. Ser. radioelektron. (Bulletin
of the Kiev Polytechnic Institute, Series on Radio Electronics),
1969, No 6, pp 84-86 (from RZh-Radiotekhnika, No 4, 1970, Abstract
No 4D99)

Translation: The authors study the effect of the regeneration
factor which characterizes internal feedback in a semiconductor
triode on the stability of cascade type amplifiers. A regenera-
tion factor is obtained for a cascade amplifier based on a semi-
conductor triode with the aid of the quadripole method. It is
shown that cascade type amplifier exhibits greater stability
than an amplifier with a common base circuit. Original article:
three bibliographic entries.

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SPIVAKOV, A.S.

allop

UDC 620.172:251.224

STUDYING THE TRUE STRENGTH CHARACTERISTICS OF SEVERAL HEAT-RESISTANT ALLOYS AT HIGH TEMPERATURES

The study of the mechanical properties of new materials includes their strength characteristics (σ_p, $\sigma_{0.2}$, δ, ψ etc.), based on a machine stress-strain diagram. However, these characteristics are arbitrary and do not reflect the true relationship between stresses and deformations, characteristic for the material being tested under its usage conditions of temperature and speed.

In this connection, many researchers have sought means for the construction of true deformation diagrams of specimens during testing [1-7].

Considering the great importance of this problem, we studied the true strength characteristics of type EI826 heat-resistant alloy, heat-treated as follows: hardening at 1210±10°C, holding for 2 hours; hardening at 1050±10°C, holding for 4 hours; aging at 800±10°C, holding for 16 hours. The specimens were cooled surrounded with air after each stage. Specimens of alloy EI437B were heat-treated as follows: heating to 1020°C, holding for 40 minutes, cooling in oil; heating to 350°C, holding for 1 hour, cooling in air.

The tests were performed using short cylindrical specimens, diameter of gauge portion 6 mm, with M14 threaded heads in clamps.

The method of testing was as follows. During loading and recording of diagrams in coordinates P-Δl, test specimen 6 (see diagram on Figure 1), in split resistance furnace 7, was photographed. The specimen was heated to the required temperature, measured using thermocouple 10 and portable potentiometer 11, type PP-63. During the deformation process, the specimen was photographed through a special slit in the furnace by camera 1, a Zenit-S with telephoto lens 2, a Yupiter-6. Special light source 4, providing a powerful parallel light beam, was used to assure even illumination of the specimen.
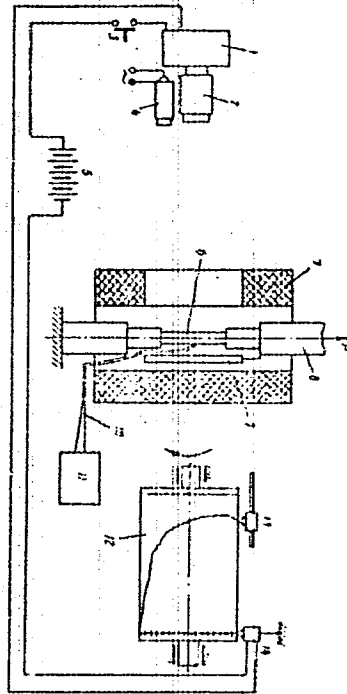
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[I - USSR - 1]

Figure 1.   Diagram of device for construction of true deformation diagrams.

The diagramming apparatus of the test machine is equipped with pen 13, which records a diagram in coordinates P-Δl on drum 12, and pen 14, attached to the core of a magnetic coil, which is connected through power supply 5 to the electric circuit of the flash apparatus of the camera. Thus, at the moment when the specimen being tested was photographed (when the camera shutter 3 was pressed) the magnetic coil of pen 14, fastened to the body of the diagramming apparatus, was energized. The pen thus marks the abscissa of the diagram recording the deformation by means of pen 13 to record the time when each picture was made.
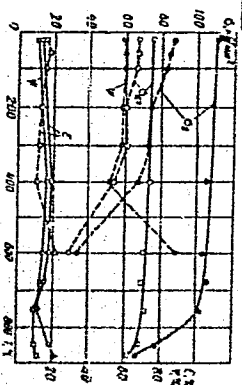
Figure 2.   Strength and plasticity of 1Kh17N2Sh Alloy (Dotted Lines) and EI826 alloy (Solid Lines) as functions of temperature.

-2-

USSR   UDC 620.172.251.224

RUDENKO, V. N., SPIVAKOV, A. S., Kiev

"Study of True Strength Characteristics of Certain Heat Resistant Alloys at High Temperatures"

Kiev, Problemy Prochnosti, No 5, May, 1971, pp 77-80.

Abstract: A method is presented for constructing true diagrams of deformation of heat resistant alloys at high temperatures, and results are presented of investigation of the alloys EI826 and 1Kh17N2Sh over a broad temperature range. Dependences between transverse and longitudinal deformation are constructed at the temperatures studied right up to rupture of the specimens. The method consists of simultaneous recording of a stress-strain diagram by a strip chart recorder and photography of the test specimen through a special aperture in the heating furnace.

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STARODUBOV, K. F., SAVENKOV, V. YA., SPIVAKOV, V. I., STOLPAKOV, M. A.,
GORBATOV, V. I., and RUSETSKAYA, M. I.

"Heat Treatment of Steel Plates"

Abstract: Workers of the Institute of Ferrous Metallurgy and the Zhdanov
Metallurgical Institute have developed a method and facility for a new type
of heat treatment of steel plates guaranteeing high rates and uniformity of
cooling. Results of investigations carried out under laboratory and industrial
conditions on steel plates of different thicknesses (3-28 mm) and brands
(3, 20sp, 3 sp, and 14G2SAF) are discussed. An experimental-industrial lot
of 10-mm-thick plates of 14G2SAF steel was heat-treated up to the yield point
of $\sigma = 60-65$ kg/mm^2. Welded joints of 14G2SAF steel showed a loss of
strength of 1-3% after welding. Four illustrations, two tables,
two biblio. refs.

1/1

VINOGRADOV, V. M. and SPIVAKOVA, R. P., Kirov Academy of Military Medicine, Leningrad

"Mechanism of Action of Sympatholytics of the Guanethidine Series"

Abstract: Following intravenous injection of cats with hemedine [1-N-(hexamethylenimino)-ethyl-2-guanidine (sulfate)], secretion of cate-cholamines, epinephrine in particular, by the adrenals increased the first 60 minutes but sharply decreased within 72 to 96 minutes. The residual content of catecholamines in the adrenals was less than half that of the control at this time. The effect of the sympatholytic is attributed to exhaustion of the catecholamine reserve due to depression of their synthesis and adsorption by the nerve endings.

1/1

UDC 531.8

USSR

SPIVAKOVSKIY, A. O., GONCHAREVICH, I. F., VUKGLOV, E. A.

"Investigation of the Dynamics of a Vibration Feed-Sifter With a Motor of Limited Power Under Load"

V sb. Dinamika mashin (Machine Dynamics -- Collection of Works), Moscow, 1969, pp 239-247 (from RZh-Mekhanika, No 5, May 70, Abstract No 5A215)

Translation: Flow charts for an analog computer were developed to study the dynamics of vibration feed-sifters with an engine of limited power operating under a load. An elastic-viscous model of the load to be transported was used to take into account the effect of a load on the operation of the vibration feed-sifter. The application of an analog computer to study vibration feed-sifters makes it possible to select with maximum accuracy the design parameters of the load bearing elements, the elastic system, the vibrator and the drive to ensure a given productivity for a minimum power capacity and a maximum level of dynamic loads. An analog device was used to study the effect of the parameters of the vibration machine on the rate of vibration transporting and productive and unproductive expenditures of energy on transportation and by the machine as a whole. The basic advantages of an analog device in studying such

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USSR

SPIVAKOVSKIY, A. O., et al., Dinamika mashin, 1969, pp 239-247

machines is that it is possible to examine rapidly a large number of versions that could be achieved in practice and review the results, and it is also possible to study non-steady-state regimes as the machine passes through resonance during acceleration and retardation. Authors abstract.

2/2

USSR

SPIVAKOVSKIY, S. I.

"One Problem in Queueing Theory"

Aktual'n. Vopr. Tekhn. Kibernetiki [Pressing Problems of Engineering Cybernetics -- Collection of Works], Moscow, Nauka Press, 1972, pp 134-137 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V582, by the author).

Translation: An automaton is studied, capable of servicing a stream of requests of the total number N of requests in time Δtm. The problem is solved using the apparatus of dynamic programming, producing the required functional equations. As an example, a study is made of the problem of optimal traffic control at an intersection (N = 2). A computer program is written.

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USSR

UDC 615.361.018.46.012.6

SPIZHARSKAYA, L. M., and MAMYSHEVA, T. K., Leningrad Scientific Research Institute of Hematology and Blood Transfusion

"Preparation of Cadaver Bone Marrow from Resected Bones"

Abstract: A new method for obtaining clinically sterile bone marrow is described. The method is simpler than and superior to earlier aspiration and compression methods. In a study using 67 cadavers, it was found that the hematopoietic cells remain unchanged for 30 hours when the resected bones are properly storied and treated.

1/1

Organophosphorous Compounds

USSR   UDC 632.95

BLIZNYUK, N. K., KVASHA, Z. M., SPLINTSEVA, L. M., FADEYEV, YU. N., UNTERBERGER,
V. K., and YOLOVA, M. N. , All-Union Scientific Studies Institute of Phytopathology

"Process for Preparing Mixed Dialkyl Esters of the Higher Alkylphosphonous
Acids"

Translation: Compounds having the general formula $RP(O)(OR')OR''$ (I) (R= alkyl,
R' and $R'' = C_1$ to C_6) have acaricidal activity to the stable and sensitive

form of vegetation mites. They are prepared by the reaction of $RP(O)(OR')OH$
(II), with a 5-10-fold excess of $R''OH$. For example, Cl_2 is passed through a

solution of 0.03 moles of II ($R=C_9H_{19}$, $R'=C_6H_{13}$) and 0.15 moles of absolute

BuOH in 20 ml of CH_2Cl_2 until the appearance of a yellow-green color. It is

then concentrated and product I ($R=C_9H19$, $R'=C_6H13$, $R''=Bu$) is obtained, having

$n^{20}D = 1.4435$, $d_4^{20} =0.9211$, a boiling temperature of 176 to 178° at 1 (?)mm,

a yield of about 100%. Other analogous compounds were prepared. R,R' and R''

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USSR

BLIZNYUK, N. K., et al., Author's Certificate No 340665, filed 22 Jun 70, published 29 Jun 72

are given together with the boiling temperature in $^\circ C/mm$, n^{20}_D, n^{20}_4 ,

C_9H_{19}, C_6H_{13}, Et, 166-8/1, 1.4418, 0.9277;

C_9H_{19}, C_6H_{13}, Me, 160-2/1, 1.4430, 0.9425;

C_9H_{19}, C_6H_{13}, Pr, 172-4/1, 1.4430, 0.9270;

C_6H_{13}, Bu, Et, 124-6/1, 1.4320, 0.9512;

C_6H_{13},   Bu, 118-20/1, 1.4350, 0.9443;

C_9H_{19}, C_5H_{11}, Et, 158-60/1, 1.4400, 0.9446.

2/2

USSR   UDC 536.24:532.54

SHALVAROVA, S. V., SPODYRYAK, N. T.

"Hydraulic Resistance and Heat Exchange in a Pipe with Flat and Wavy Ray Receivers"

Translation: Results are presented from a study of the hydraulic resistance and heat exchange in a pipe with flat and wavy ray receivers, which can be practically used in existing and newly constructed air heaters. In the pipe with the flat ray receiver, the heat transfer for the range of values of R = 8,000-65,000 which was studied is 1.42-1.13 times more intensive than in a hollow pipe; for a pipe with a wavy ray receiver with a 1/2 period of 1,000 mm and a 1/2 amplitude of oscillations of 3 mm, the increase is by a factor of 1.61-1.37.

1/1

USSR

RUDENKO, I. M., SPODYRYAK, N. T.

"Flow Thermodynamics for an Isothermal Stream of Water in Corrugated Pipe"

Probl. teploenerg. i prikl. teplofiz. Vyp. 6 (Problems of Thermal Power Engineering and Applied Thermophysics. Vyp. 6), Alma-Ata, Nauka Press, 1970, pp 133-143 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11B477)

Translation: This article contains a discussion of the results of an experimental study of the resistance of corrugated pipe during isothermal flow of water. The empirical functions relating the drag coefficient to the geometric parameters of the pipe and the Reynold's number R and describing the experimental results with an accuracy of ± 4 % are presented. The predominant effect on the drag coefficient comes from the parameter of relative curvature d/R: with an increase in this parameter the resistance increases; the angular parameter a has an effect only for small values of R. The aerodynamics of the flow in a corrugated pipe are investigated. It is established that the hydrodynamic flow conditions are

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USSR

RUDENKO, I. M., et al, Probl. teploenerg. i prikl. teplofiz. Vyp. 6, Alma-Ata, Nauka Press, 1970, pp 133-143 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11B477)

exhibited in the characteristic of the velocity profile. Here, the function $\xi = f(R, d/R, \alpha)$ is explained well by the aerodynamic structure of the flow. The drag coefficient of corrugated pipe is higher with respect to absolute magnitude than the drag coefficient of straight pipe.

2/2

45

USSR

UDC 621.382.2.017.71

ZAKHARCHEVSKIY, YU. A., SPOKOYNYY, L. I

"To A Computation Of The Temperature Of The Structure Of Semiconductor Power Devices"

Preobrazovatel'n. tekhnika. Inform. nauchno-tekhn. sb. (Converter Technology. Information Scientific-Technical Collection), No 3, pp 16-17 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B143)

Translation: The paper shows that it is possible successfully to accomplish an analytical computation of the temperature of the structure of semiconductor power devices with the aid of the mathematical means of the theory of continuous linear systems and the electrothermal model of the structure of semiconductor power devices. An example is given of computation of the temperature increase of a device under the influence of a current pulse of sinusoidal form. 4 ref. V.S.

1/1

Pulse Techniques

USSR

UDC: 621.396.963.325(088.8)

ZAGIROV, U. G., SPOKOYNYY, M. M., RABINOVICH, G. L., YAKUSHEV, Zh. F.

"A Device for Reception of Pulse Radio Signals"

USSR Author's Certificate No 267708, filed 1 May 67, published 4 Aug 70 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D42 P)

Translation: The proposed device contains an antenna pickup of azimuthal marks, a reception module, a module for shaping a range origin pulse, a threshold stage, an accumulator, an indicator of operability of the reception channel, an input/output selector switch, and a pilot signal shaper which includes a pilot signal oscillator and a modulator. In order to keep a constant check on the working capacity of the receiving device directly from the mark on the display for the range and azimuth operator, the device is equipped with a stage for time coincidence of signals from the outputs of the threshold stage and the modulator of the pilot signal shaper; the modulator trigger pulses are sent from the azimuthal mark pickup through a switch whose controlling input is connected to the output of the channel for shaping the pulse of range origin through the delay line of the pilot signal shaper.

1/1

Electricity and Magnetism

USSR

AKHIYEZER, I. A.; SPOL'NIK, Z. A. (Physicotechnical Institute of the Ukrainian Academy of Sciences, Khar'kov)

"A Theory of Magnetic Transitions in Antiferromagnetics"

Leningrad, Fizika Tverdogo Tela; January, 1973; pp 226-30

ABSTRACT: The authors studied the thermal antiferromagnetic-ferromagnetic transition in magnetically ordered crystals. It is shown that in the presence of weak ferromagnetism this transition takes place, not with a jump, but smoothly, so that in a temperature interval on the order of 0.1° the crystal is in an intermediate state between the ferro- and antiferromagnetic. It is established that thermal hysteresis during such a transition is possible. In addition, the effect of spontaneous electrical polarization and an external electrical field on the reversal of the magnetic moments of the sublattices in antiferroelectrics is studied.

The article includes 10 equations. There are 10 bibliographic references.

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1/2   010   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--COHERENT EXCITATION OF OSCILLATIONS BY STREAMS OF PARTICLES IN
   FERROMAGNETICS WITH SMALL MAGNETIC ANISOTROPY -U-
AUTHOR-(03)-AZHIYEZER, I.A., BOLOTIN, YU.L., SPOLNIK, Z.A.

COUNTRY OF INFO--USSR

SOURCE--KIEV, UKRAINSKIY FIZICHESKIY ZHURNAL: MARCH, 1970, PP 433-7

DATE PUBLISHED-------70

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                     UNCLASSIFIED

CIRC ACCESSICN NO--AP0123546
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COHERENT EXCITATION OF COUPLED
  MAGNETOACOLSTICAL OSCILLATIONS IN FERROMAGNETIC CRYSTALS NEAR THE
  CRITICAL POINT, IN WHICH THE CHARACTER OF THE MAGNETIC ANISOTROPY
  CHANGES, IS INVESTIGATED. THE INCREMENTS OF THE INCREASE IN THE
  OSCILLATICNS ARE DETERMINED. IT IS SHOWN THAT THESE INCREMENTS CAN BE
  CONSIDERABLY LARGER THAN THE INCREMENTS OF THE INCREASE OF SPIN WAVES IN
  ORDINARY FERROMAGNETICS.   FACILITY: PHYSICS ENGINEERING INSTITUTE
  OF THE UKRAINIAN ACADEMY OF SCIENCES, KHAR'KOV.

UNCLASSIFIED

USSR

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AKHIYEZER, I. A., BOLOTIN, YU. L., and SPOL'NIK, Z. A., Physico-Technical Institute of the Ukrainian Academy of Sciences, Kharkov (Fiziko-Tekhnicheskiy institut AN USSR, Khar'kov)

"Coherent Excitation of Oscillation by Particle Fluxes in Ferromagnetics with Low Magnetic Anisotropy"

Abstract: The authors determine the condition for the coherent excitation of coupled oscillation by particle fluxes in ferromagnetics with low effective anisotropy. The growth increment for the oscillations is also determined. The results show that the growth increment is significantly larger than encountered in ordinary ferromagnetics. This is explained by the fact that long-wave oscillations are excited in crystals with low effective magnetic anisotropy. As a consequence, the coupling parameter b is large and is proportional to the square of the wavelength.

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USSR

S

AKHIYEZER, I. A.; BOLOTIN, Yu. L.; SPOL'NIK, Z. A. (Physics-Engineering Institute of the Ukrainian Academy of Sciences, Khar'kov)

"Coherent Excitation of Oscillations by Streams of Particles in Ferromagnetics with Small Magnetic Anisotropy"

Kiev, Ukrainskiy Fizicheskiy Zhurnal; March, 1970; pp 433-7

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ABSTRACT: The coherent excitation of coupled magnetoacoustical oscillations in ferromagnetic crystals near the critical point, in which the character of the magnetic anisotropy changes, is investigated. The increments of the increase in the oscillations are determined. It is shown that these increments can be considerably larger than the increments of the increase of spin waves in ordinary ferromagnetics.

The article includes 14 equations. There are 4 references.

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USSR

UDC 539.3:534.1

SPORYKHIN, A. N., FILATOV, G. F.

"Using the Method of Excitation of Elastic Potential In Certain Stability Problems"

4-ya Vses. Konf. po Probl. Ustoychivosti v Stroit. Mekh., Tezisy Dokl. [Fourth All-Union Conference on Problems of Stability in Structural Mechanics, Abstracts of Reports], Moscow, 1972, p 26, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 V291).

Translation: The method of excitation of the elastic potential is used to study the influence of compressibility and moment stresses on the stability of elastic bodies of rubber-like materials and finitely deformable composites. It is assumed in both cases that the elastic potential W can be represented as $W = W_0 + \epsilon W'$, where W_0 is the primary elastic potential, which determines the subcritical (not necessarily homogeneous) deformed state of the body, ϵ is a small dimensionless factor, W' is the excitation of the elastic potential. Concretization of the form of the dependence of W' on kinematic variables allows the influence of compressibility to be considered in the first approximation (W_0 then corresponds to an incompressible body), plus

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USSR

UDC 539.3:534.1

SPORYKHIN, A. N., FILATOV, G. F., 4-ya Vses. Konf. po Probl. Ustoychivosti v Stroit. Mekh., Tezisy Dokl., Moscow, 1972, p 26.

moment stresses in the framework of the Kosser model with restricted rotation (W_0 in this case is independent of deformation tensor gradients). The characteristic determinants are produced and analyzed for particular examples.

USSR

RUBTSOV, M. I., SPORYKHIN, V. I., PERVUSHEVEKIY, V. P., MOROZOV, V. F.,
LUTSET, B. Ya., SHCHUKIN, L. I.

"Impulse Gas-Discharge Light Source"

Otkrytiya Izobreteniya Promyshlennye Obrazts Tovarnye Znaki, No 31, 1972,
Patent No 355694.

Translation: 1. An impulse gas-discharge light source with an optically
transparent tubular bulb, within which are a dielectric plate, used to
elongate the discharge channel and electrode units assembled on one side of
the bulb and separated by the plate, differing in that in order to increase
the evenness of radiation in the plane perpendicular to the axis of the tube,
increase the electrical breakdown resistance and limiting electrical loads
on the discharge device, the dielectric plate is bent into a screw shape in
the zone of the discharge, forming bifillar spiral channels with its two
large edges, connected together by a channel, while the two small edges are
hermetically sealed to the inside of the bulb, thus limiting the discharge
channel.

2. A light source according to Claim 1, differing in that in order to
increase the stability to the effects of mechanical loads, the electrodes are
made as truncated cones, compressed against the side surface of the bulb wall.
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USSR

RUBTSOV, M. I., SPORYKHIN, V. I., ET. AL., Otkrytiya Izobreteniya Promyshlen-
nye Obraztsy Tovarnyye Znaki, No 5, 1972, Patent No 355694.

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USSR   UDC: 621.375.4

SPOSOBIN, N. I.

"Calculation of the Transfer   and Frequency Characteristics of a Transistorized Class D Push-Pull Amplifier"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications--collection of works), Moscow, "Svyaz'", 1970, pp 49-54 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D98)

Translation: The author considers a transistorized class D push-pull amplifier with RLC loading. Expressions are derived for the transfer characteristic both for the case of a harmonic influence and for the case of a discontinuity effect. Expressions are presented for the amplitude-frequency and phase-frequency responses of the amplifier. Three illustrations, bibliography of five titles. Resumé.

1/1

METHODICAL FOUNDATION FOR STUDYING THE EFFICACY OF ANTIEPIDEMIC MEASURES

S. S. Spotarenko

The author studied the menthodical foundations for assessment of the efficacy of antiepidemic measures, particularly criteria of the efficacy of evaluation of antiepidemic measures, as well as the principal ways and methods of solving this task. The author emphasizes that in assessment of antiepidemic measures there should be the most thorough and detailed approach as applied to each individual infection (proceeding from its epidemiological peculiarities) and every measure carried out.

REEL/FRAME

19770365

USSR

BAKHUR, Ye. A., NAUMENKO, Yu. I., and SPOTARENKO, S. S., Central Institute of Epidemiology and Moscow Institute of Roentgenology and Radiology

"Possibility of Using the Krantz Jet Injector for Injecting Gamma Globulin"

Abstract: Gamma globulin injected intradermally with a Krantz syringe was not efficacious in preventing infectious hepatitis even during the first few months after immunization. In investigating the cause, the authors found that the device does not force the full dose of the preparation into the skin, mainly because of its viscosity. Tests showed that when the injector was filled with distilled water or physiological saline, about 2% of the liquid was not discharged, but when it was filled with 10% gamma globulin, as much as 6 to 7% remained in the reservoir. Moreover, other tests using the radioisotope method (Au^{198}) revealed that only 19% of a 0.1 ml dose of gamma globulin enters the skin when the Krantz injector is used compared to 57% of the same amount of physiological saline.

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UDC: 614.4

USSR

SPOTARENKO, S.S., Central Institute of Epidemiology

"Basic Methods for Studying the Effectiveness of Epidemic Control Measures"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 2, 1970, pp 112-115

Abstract: The incidence of a given disease (lethality, mortality) is the only valid criterion of the effectiveness of a particular preventive or control measure. This criterion should be based on: 9i) determination of the level and dynamics of the sick rate in two groups, in one of which the measure under study was used (experimental group), and in the other not used (control group); (ii) study of the level and dynamics of the sick rate in groups where the nature of the measure under study was different; and (iii) determination of the level and dynamics of the sick rate in the same group before and after the measure under study was used. Since both the level and dynamics of morbidity of a given disease are determined by the sum of the influences of many factors, there is no functional relationship between the use of the measure and the result with respect to the effect on the epidemic process. Hence the above procedures are useful in determining a connection between the level and dynamics of morbidity and the effect of a control measure only if the other factors that influence the frequency of manifestation of the chosen feature are excluded.

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Ref. Code: UR 0016

Acc. Nr: AP0036976

LABORATORY STUDIES OF STRESSOR AND SENSITIZING
ACTION OF HUMAN GAMMA-GLOBULIN

Leytes, F. L.; Spotarenko, S. S.; Avaliani, Z. S.;
Semashko, M. I.; Karon, B. I.

The authors applied determination of biochemical urinary excretion of 17-ketosteroids
to the study of stressor effect of homologous gamma-globulin in man. The possible sensitizing
action of this preparation was investigated by testing degranulation of mast cells of mouse
subcutaneous connective tissue in their contact with the serum mixture of immunized children
and gamma-globulin. It was found that gamma-globulin (10%) possessed a weak stressor ef-
fect, not manifested clinically. Gamma-globulin produced a desensitizing effect, which was
evidently associated with the competition of gamma-globulin with allergic antibodies at the
territory of connective tissue cells.

REEL/FRAME
19721904

Acc. Nr: AP0036977

CONCERNING THE REACTOGENICITY OF PLACENTAL γ-GLOBULIN

G. S. Spatarenko, B. I. Karon

Checking of the reactogenicity of placental γ-globulin (10 and 1% solutions) under con-
ditions of a controlled trial on 384 preschool children confirmed its areactogenicity.
In the authors' opinion discrepancy between the data obtained by different investiga-
tors in studying the reactogenic properties of biopreparations was conditioned either by their
nonstandardability or by methodical errors during the experiment (the absence of a control
group or inequality of experimental and control groups).

D.N 1

REEL/FRAME
19721905

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TARNOPOL'SKIY, YU. M., PORTNOV, G. G., SPRIDZANS, YU. B., and BULMANIS, V. N.,
Institute of Polymer Mechanics, Academy of Sciences of the Latvian SSR, Riga

"The Supporting Power of Rings Formed by the Winding of Composites Reinforced by High-Modular Anisotropic Fibers"

Abstract: The authors study the particulars of composites which are related to the intrinsic anisotropy of reinforcing fibers. The effect of twisting and reinforcement stretching is studied on the axisymmetry of the field of deformations, and the moduli of elasticity and strength in the direction of the fibers under external and internal pressure loading, while taking into consideration the increased pliability of the material in a transverse direction. In the case of modular material, the authors obtain numerical estimates for the moduli of elasticity E_θ and E_r, for the coefficients of thermal expansion α_θ and α_r, and for the initial temperature stresses σ_r and σ_θ. The dependence of the destructive pressure on ring thickness is described and the conditions for failure are formulated. In all the studied problems it is shown that it is necessary to take into consideration the increased pliability of the composites in the transverse direction.

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Abstract: Evaluations of the following two types are validated
for algebraic numbers of degree $n \geqslant 5$ with the largest possible
value of the exponents χ and μ: i.e., with $\chi = \mu = 1$:

$$(1) \qquad |x - \alpha y| > c_1 X^{-n+1} \exp (\ln X)^{\lambda - \varepsilon}$$

where n is the power of α of the field of rational numbers Q;
$n \geqslant 3$; $\chi = 1/(n+1)$; $\varepsilon > 0$ arbitrarily; x, y are any rational
integers not simultaneously equal to zero; $X = \max (|x|, |y|)$;
$c_1 > 0$ is a quantity expressed in explicit form in terms of α and
ε.

1/2

USSR

SPRINDZHUK, V. G., Izvestiya Akademii Nauk SSSR, Seriya Matematicheskaya, Vol 35, No 5, Sep/Oct 71, pp 991-1007

$$(2) \qquad |x - \alpha y| \prod_{p \in S} |x - \alpha y|_p^{r_p} > c_1 X^{-n+1} \exp(\ln X)^{\mu-\varepsilon}$$

where $\lambda = 1/[n(s+1)+1]$; s is the number of ideals p in S; $n_p = [Q_p(\alpha):Q_p]$; $\varepsilon > 0$ arbitrarily; and $c_1 > 0$ is a quantity effectively determined in terms of α, ε, and S. Proof of these evaluations involves establishing that "exceptional" numbers in a defined sense can exist only when $n = 4$ (if they actually exist).

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USSR

SPRINDZHUK, V. G. (Mathematics Institute, Belorussian Academy of Sciences)

"Expressing Integers by a Limited Number of Random Terms"

Minsk, Vestsi Akademii Navuk BSSR: Seryya Fizika-Matematychnykh Navuk; No 1,
1970; pp 5-14

Abstract: Let $k \geqslant 1$ be a whole number; Δ be the set of sequences of natural
numbers $A = \{a_n\}$ of the form $n^k \leqslant a_n < (n + 1)^k$ $(n = 1, 2, \ldots)$. From Δ we
choose a δ-algebra of subsets for which is determined the measure induced by
the mapping of Δ on the interval $(0, 1)$:

$$A \to \alpha(A) = \sum_{n=1}^{\infty} \frac{r_n}{d_1 d_2 \ldots d_n} ;$$

where $d_n = (n + 1)^k - n^k$, $r_n = a_n - n^k$ $(n = 1, 2, \ldots)$. In the article the
author presents a method for studying the additive properties of the "randomly
selected" sequences $A \in \Delta$. In particular, for nearly all sequences of A the
number of solutions of the equation

$$x = x_1 + x_2 + \ldots + x_m, \quad x_i \in A \quad (i = 1, 2, \ldots, m)$$

1/2

USSR

is equal to

$$\frac{\Gamma^m\left(1+\frac{1}{k}\right)}{\Gamma\left(\frac{m}{k}\right)} x^{\frac{m}{k}-1} + O\left(x^{\frac{m}{k}-1-\frac{1}{2k}+e}\right),$$

providing $m \geqslant 2k + 1$. The method is based on the use of evaluations of trigonometric sums for random numerical sequences in the style of I. M. Vinogradov.

Three theorems are proven. The article includes 14 equations. There are 7 references.

2/2

USSR   UDC 511

SPRINDZHUK, V. G., Institute of Mathematics, Academy of Sciences Belorussian SSR

"On an Evaluation of the Solutions of Thue's Equation"

Abstract: Let $f = f(x,y)$ be an integral, irreducible binary form of degree $n \geqslant 3$. Long after A. Thue established the finiteness of the number of solutions of the Diophantine equation

$$f(x, y) = A, \qquad (1)$$

it was impossible to obtain an evaluation of the number of solutions themselves in the general case without special limiting assumptions about the form f.

Such an evaluation was recently obtained by A. Baker:

$$\max (|x|, |y|) < \exp \{ n^{v'} H_f^{n'} + (\ln |A|)^{x} \}. \qquad (2)$$

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SPRINDZHUK, V. G., Izvestiya Akademii Nauk SSSR, Seriya Matematicheskaya,
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In two earlier works the author of the present article analyzed the number
of solutions of the "Thue-Mahler equation"

$$f(x, y) = A p_{p_1}^{z_1} \dots p_s^{z_s},$$

(3)

and obtained the following evaluation:

$$\max(|x|, |y|, p_1^{z_1}, \dots, p_s^{z_s}) < \exp\{c_1(\ln A')(\ln\ln A')^{s(n+s-1)}\};$$

(4)

where $A' = |A| + 10$: c_1 is a quantity which does not depend on A but on
coefficients of the form f, its degree, and on the numbers $p_1, \dots, p_s$
and can be effectively expressed through them. This evaluation was based
on the assumption that $n \geqslant 4$ and the form f does not have to be "exclusive"
for $n = 4$. A superficial analysis of the reasoning used to prove (4) shows
that if it is not assumed that form f is fixed and the influence of its co-
efficients on the number of solutions of (3) is considered, evaluation (4)
will still retain its appearance, but it is necessary to put $A' = |A| H_f + 10$

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and the quantity c_1 must be replaced by a new quantity which does not depend
on A and H_f but on the field in which one of the roots of form f lies and is
effectively defined by the discriminant of this field. The present article,
using the example of equation (1), analyzes this method and attempts to
consider the "basic contribution" made to the evaluation of the solutions
of equation (1) by a "constant" of the type c_1 which depends on the field
over which form f is reducible. Very important in this connection is a new
lemma on the construction of special independence units of an algebraic
number field.

The following evaluation is obtained for solutions of equation (1):

$$\max(|x|, |y|) < \exp R \{(c_3 (\ln|A| + \ln H_f + R))^{(1+t)/(1-2t)} +$$
$$+ (c_3 R \zeta^{-1})^{4(1+t)(n+1)/t} \}; \tag{5}$$

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where ξ is any real number of the interval $0 < \xi < \frac{r}{2}$; $R = |D|^{\frac{1}{2}} h{-1}(\ln |D|)^{2n}$; D and h are respectively the discriminant and the number of classes of ideals of the field K, obtained by adjoining the root of form f to a rational number field; the quantities c_2 and c_3 depend only on n and are effectively defined according to n, $n \geqslant 4$, and in the case n=4 form f is not exclusive.

The value of the solutions of equation (1) is strongly infleunced by the number of classes of ideals of the field K -- a phenomenon which can lead to new information about the number of classes of ideals of algebraic number fields. For the derivation of evaluation (5) the author uses a theorem on the relation between evaluations of linear forms and the logarithms of algebraic numbers in different metrics.

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ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE ESTABLISHMENT OF VNIIMORGEO BY
  THE USSR MINISTRY OF GEOLOGY IN 1967 WAS AN IMPORTANT STEP IN PLANNING
  THE EXPLOITATION OF SEA BOTTOM MINERAL WEALTH.   THE INSTITUTE
  INVESTIGATES THE GEOLOGIC STRUCTURE AND DISTRIBUTION OF MINEARL WEALTH
  IN THE U.S.S.R. AND NEUTRAL WATERS, CONDUCTS PROSPECTING OPERATIONS FOR
  OIL AND MINERAL DEPOSITS IN THE SHELF AREAS, DEVELOPS AND IMPROVES
  INSTRUMENTATION AND SYSTEMS FOR MARINE GEOLOGICAL AND GEOPHYSICAL
  INVESTIGATIONS, AND STUDIES THE ECONOMICS OF EXPLOITATION OF SEA BOTTOM
  RESOURCES.   THE VNIIMORGEO IS CURRENTLY OPERATING IN THE CASPIAN AND
  BALTIC SEAS.   THE SOVIET SECTORS OF THE BALTIC SEA WILL SOON BE COVERED
  WITH A GEOLOGICAL AND GEOPHYSICAL COMPLEX FOR THE COMPILATION OF MEDIUM
  SCALE MAPS.   THE INSTITUTE WILL EXPAND ITS ACTIVITIES TO ARCTIC AND
  OTHER WATERS.   UNDERSEA METHODS OF ORIENTATION AND SITE DETERMINATION
  MUST BE DEVELOPED.   THE IKHTIANDR OF THE DONETS DIVERS CLUB, SADKO OF
  THE LENINGRAD HYDROMETEOROLOGICAL INSTITUTE, AND CHERNOMOR OF THE
  INSTITUTE OF OCEANOLOGY OF THE USSR ACADEMY OF SCIENCES AND UNDERSEA
  HABITATS CURRENTLY HELPING DEVELOP WAYS FOR HUMANS TO SURVIVE UNDER
  WATER.   A CENTRAL INFORMATION SERVICE FOR UNDERSEA DATA MUST BE
  ESTABLISHED SOON.   FACILITY: VSESOYUZNYY
  NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT MORSKOY GEOLOGII I GEOFIZIKI,
  VNIIMORGEO.

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CHISTOV, Ye. D., OSIPOV, V. Ye., SPRYGAYEV, I. F., SOLODIKHINA, L. D., and DZHAGATSPANYAN, R. V.

"Radioactive Contamination in a Radiochemical Reactor"

Moscow, Figiyena i Sanitariya, No 6, 1970, pp 76-80

Abstract: A study of the design and mode of operation of the RS-2.5, the first Soviet industrial radiochemical reactor, which is used to sulfochlorinate saturated hydrocarbons and initiate Co^{60} gamma radiation is presented. It consists of a central axial irradiating unit, Co^{60} sources hermetically sealed in spherical cassettes, nonradioactive spheres, storage place for sources, distributing mechanisms, and biological protection. Radiocontamination of the inactive spherical elements of the reaction is well below the level permitted for radioactive preparations. Additional sealing of radioactive Co^{60} preparations in cassettes would decrease the possibility of the casing of the sources breaking and contaminating the atmosphere.

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Magnesium

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USSR

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., KASHKAROV, A. Z., DONSKIKH, P. A., KOLESNIKOV, A. V., GOLUBEV, A. A., SPRYGIN, A. I., KOLESNIKOV, V. A., and KUZ'MIN, V. V., All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry, and Berezniki Titanium-Magnesium Combine.

"Device for Conveying Liquid Electrolyte and Magnesium"

Translation: In order to utilize the heat of the exothermic reactions taking place during the mixing of reversible electrolyte with $MgCl_2$ and to preclude the consumption of electric energy for heating the main conveyer lines, a pipeline for conveying the reversible electrolyte and metallic magnesium was installed inside a trough-shaped channel to convey a magnesium chloride-enriched electrolyte, the pipeline being connected at one end with the last electrolyzer of the flow line, and at the other with a mixer, while the trough-shaped channel is connected with the lead electrolyzer and the mixer.
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