USSR

UDC 621.357.035.4:621.79.027(088.8)

DAVYDOV, A. D., KAMKIN, A. N., KASHCHEYEV, V.D., MITYASHKIN, D. Z., KLOPOVA, S. V.

"Electrolyte for Electrochemical Machining of Niobium and Its Alloys"

USSR Author's Certificate No 315558, filed 13 Apr 70, published 30 Nov 71 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L311P)

Translation: An electrolyte has been patented for electrochemical machining of Nb and its alloys. It is distinguished by the fact that in order to increase the process stability and the quality of the surface subjected to anodic solution, a bromide salt, for example, NaBr, a nitrate salt, for example, $NaNO_3$, a base, for example, NAOH, H_3BO_3 and water are introduced into its composition. The components are taken in the following proportions (in % by weight): bromide salt 30-50, nitrate salt 0.5-2, alkali 0.5-2, H_3BO_3 3, the rest water.

The proposed electrolyte has been tested on an experimental setup. Flat specimens produced by turning with an area of 8 cm^2 and a class 4-5 surface finish were machined. The machining was carried out in a solution of the following composition (% by weight), KBr 45, $NaNO_3$ 1, KOH 1. The electrode gap is maintained within the limits of 0.3 mm, and the electrolyte pressure at the intake to the operating gap is 8 kg/cm^2. When applying a voltage of 6 volts to the

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USSR

DAVYDOV, A. D., et al., USSR Author's Certificate No 315558, filed 13 Apr 70, published 30 Nov 71

system, destruction of the film of Nb pentoxide takes place, and the current strength increases sharply. The rate of anodic solution increases linearly with an increase in D_a. The BT_a is ~70%. The electrolyte temperature is kept within the limits $20\pm 3^\circ$ by means of a special refrigerating unit. After machining, a smooth light surface with 6-7 class finish was obtained. After passage of 10 a/hour, the pH of the electrolyte decreases from 13 to 9, and the machining quality becomes worse. This can be eliminated by adjusting the electrolyte with alkali, but it is expedient to introduce 3% boric acid into the composition which has a buffering effect and to increase the alkali content to 2% in order not to lower the initial pH value.

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USSR

UDC: 51

DEDIKOV, E. A., YERSHOV, S. G., CHERNINA, L. P.

"On One Method of Distributing a Production Plan Over Planned
Periods"

Translation: Justification is given for distribution of an
annual production plan into quarters. The problem of pro-
viding discrete articles for the quarterly plans, and optimum
utilization of the resultant reserves in production capacity
is considered. A mathematical model and algorithms for
solution of the formulated problem are presented. A flow-
chart is worked out. Authors' abstract.

1/1

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1/2   023   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--EFFECT OF ELECTROLYTE PH ON THE ANODIC DISSOLUTION OF IRON DURING
   ELECTROCHEMICAL TREATMENT -U-
AUTHOR-(03)-DAVYDOV, A.D., KABANOV, B.N., KASHCHEEV, V.D.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (1), 48-51

DATE PUBLISHED-------70

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

TOPIC TAGS--ELECTROCHEMISTRY, ELECTROCHEMICAL MACHINING, METAL
   PASSIVATION, IRON ALLOY, ELECTROLYTE, ANODIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0134   STEP NO--UR/0472/70/000/001/0048/0051

CIRC ACCESSION NO--AP0054930
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0054930
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF PH ON THE ANODIC
  DISSOLN. OF ARMCO FE IN BUFFERED 4.5 NACL SOLN. WAS STUDIED BY
  POTENTIOSTATIC POLARIZATION CURVES AT A ROTATING DISK ELECTRODE (5000
  RPM). THE POTENTIAL WAS VAIRED AT A RATE EQUALS 2 V-MIN. AT PH VALUES
  GREATER THAN 8, PASSIVATION OCCURRED AT A VOLTAGE SIMILAR TO 0.8
  RELATIVE TO THE STD. H ELECTROD AND PRACTICALLY STOPPED AN FURTHER
  ELECTROCHEM. MACHINING. PASSIVATION WAS DUE TO FILM FORMATION.

UNCLASSIFIED

1/2   024   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--POSSIBLE INTENSIFICATION OF THE CHROMIUM PLATING PROCESS -U-

AUTHOR-(03)-DAVYDOV, A.D., RYABOY, A.YA., KASHCHEYEV, V.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6-(2), 292

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRODE, ADHESION, METAL, CHROMIUM PLATING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1397   STEP NO--UR/0364/70/006/002/0292/0292

CIRC ACCESSION NO--AP0107870
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0107870
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY OF INTENSIFYING
THE CATHODIC DEPOSITION OF CR ON A SMOOTH STEEL ELECTRODE WAS STUDIED BY
USING A COLD ELECTROLYTE OF THE COMPN. (G-1.): CRO_3 400, H_2SO_4 3,
NAOH 60, SUGAR 2. WITH INCREASING C.D. THE CURRENT EFFICIENCY
INCREASES LINEARLY BETWEEN 0.1 AND 4.5 A-CM PRIME2. WITH INCREASING
C.D. THE HARDNESS OF THE CR DEPOSITS INCREASES. AT HIGH C.D. A
REVOLVING DISK ELECTRODE WAS USED WITH OHMIC POTENTIAL DROP BETWEEN THE
STUDIED ELECTRODE AND THE REF. ELECTRODE. UNDER POTENTIOSTATIC
CONDITIONS AT MINUS 1.2 V A DENSE CR DEPOSIT WITH GOOD ADHESION TO STEEL
WAS FORMED. THE CURRENT EFFICIENCY EXCEEDS 60PERCENT. THE
MICROHARDNESS IS 1100 KG-MM PRIME2. WITH A FAST ELECTROLYTE FLOW
THROUGH A NARROW GAP BETWEEN THE ELECTRODES THE OUTPUT OF THE PROCESS
CAN BE CONSIDERABLY INCREASED. THIS IS IMPORTANT FOR THE APPLICATION OF
THICK DEPOSITS OF SOLID CR, E.G. IN THE REPAIR OF WORN OUT PARTS.
FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

UNCLASSIFIED

DAVYDOV, A.M., MANENKOV, V.I.

"Concerning The Noise Immunity Of Spaced Reception In A Two-Beam Channel"

Abstract: The transmission is considered of binary communications in a two-beam channel with the aid of orthogonal signals which have an identical envelope $\rho(\tau)$ of autocorrelation functions. New relations are obtained for computation of the probability of error with a random change of the time lag of the beams. It is found that with a given correlation coefficient R, the noise immunity in a two-dimensional Rayleigh channel is higher than in a two-beam Rayleigh channel. The authors thank G. Ya. Lyakhovetskiy for critical comments which were taken into account in the work. 2 ill. 5 ref. Received by editors, 20 Oct 1970.

1/1

TITLE--ESTIMATE OF COMMUNICATION EFFICIENCY IN MULTIPATH CHANNELS -U-

AUTHOR--DAVYDOV, A.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. VUZ RADIOELEKTRONIKA (USSR), VOL. 13, NO. 1, P. 65-7, JAN.
1970
DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--COMMUNICATION SYSTEM, MULTIPATH COMMUNICATION, MULTIPATH
TRANSMISSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1718   STEP NO--UR/0452/70/013/001/0065/0067

CIRC ACCESSION NO--AP0136957
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0136957

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ESTABLISHES THE GREATEST
PERMISSIBLE NUMBER OF STATIONS FOR SIMULTANEOUS OPERATION, WITHIN A
FREQUENCY RANGE F, UNDER GIVEN CHARACTERISTICS OF THE MULTIPATH CHANNEL,
AND IN THE ABSENCE OF MUTUAL INTERFERENCE. THE EFFICIENCY OF THE
COMMUNICATION SYSTEM IS CALCULATED FROM THE AGGREGATE OF THE STATIONS
OCCUPYING THE BANDWIDTH F. AS CRITERIA OF THE EFFICIENCY, THE CHANNEL
TRAFFIC CAPACITY ETA EQUALS R-C AND FREQUENCY UTILISATION BANDWIDTH
COEFFICIENT GAMMA EQUALS R-F ARE USED; R IS THE RATE OF TRANSMISSION OF
INFORMATION AND C IS THE CHANNEL TRAFFIC CAPACITY. THE BINARY SYSTEM
OF INFORMATION TRANSMISSION IN A TWO PATH CHANNEL IS DISCUSSED, THE
EXPRESSIONS FOR OPTIMUM EFFICIENCY OF THIS SYSTEM ARE FOUND.

UNCLASSIFIED

Molecular Physics

USSR

DAVYDOV, A. S., SUPRUN, A. D. (Institute of Theoretical Physics of the
Ukrainian Academy of Sciences, Kiev)

"Configuration Changes and Optical Properties of α-Spiral Protein Molecules"

Abstract: The paper deals with the excited states of a protein molecule and
with the changes in molecular configuration connected with these excitations.
A possible optical manifestation of such excited states is also investigated.
With excitation of exciton states in an α-spiral the energy level correspond-
ing to an excited state of an isolated peptide group is shown to split into
two zones -- "symmetric" and "antisymmetric."

        In the study of the changes in the α-spiral configuration, the anti-
symmetric excitations are of essential importance. With optical excitation
of the α-spiral two states transversely polarized ($E_c^\perp$ and $E_a^\perp$) and one state
polarized in the longitudinal direction ($E_a^\parallel$) are realized.

        The article includes a figure depicting schematically a portion of the
α-spiral and 20 equations. There are five references.
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USSR

DAVYDOV, A. S., and YEREMKO, A. A., Institute of Physics, Ukrainian Academy of Sciences, Institute of Theoretical Physics, Ukrainian Academy of Sciences, Kiev

"Light Absorption by Crystals with Spatial Dispersion"

Abstract: The phenomenological theory of light absorption by crystals is considered on the basis of the Maxwell equations. Auxiliary extrinsic currents on the crystal surface are used in the calculations. Then the currents are expressed through the field intensities of waves incident to the crystal sur-face. This enables one, without introducing additional boundary conditions, to study the passage of light through the crystal and its reflection from the surface.

        The authors determine the conditions under which singularities associated with spacial dispersion of the dielectric constant may arise. A case of the time change of a spacially homogeneous electromagnetic field in the crystal is also dealt with.

        The article includes 54 equations. There are 12 references.

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UDC 539.199

DAVYDOV, A. S., Academician of the Academy of Sciences Ukrainian SSR, and
SUPRUN, A. D., Institute of Theoretical Physics, Academy of Sciences Ukrain-
ian SSR, Kiev

"Quantum Theory of Protein Molecule Contraction"

Abstract: The article develops a quantum theory for one of the mechanisms
for the contraction of protein molecules during their excitation. Contrac-
tile proteins are polypeptide chains of amino acid residues. They are coiled
in an alpha-helix as a result of the appearance of hydrogen bonds between

the oxygen and hydrogen of the peptide groups $\overset{\displaystyle H}{\underset{\displaystyle O}{\overset{|}{N} - \overset{||}{C}}}$ of the first and fourth,

second and fifth, etc. amino acid residues; three chains of hydrogen bonds
are thus formed along the helix. When the state of the peptide groups

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USSR

DAVYDOV, A. S., and SUPRUN, A. D., Doklady Akademii Nauk SSSR, Vol 205, No 4, 1972, pp 809-811

changes, the quantity of the hydrogen bonds changes and the lead of the helix is changed thereby. One of the three hydrogen bond chains is considered for a quantitative calculation of this change.

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USSR

DAVYDOV, A. S., Academician of the Ukrainian Academy of Sciences, and SERIKOV, A. A.

"Energy Transmission Between Impurity Molecules With Relaxation"

Abstract: To investigate the role of the relaxation processes in which energy is transmitted irreversibly from donor to acceptor molecules, the authors develop the theory of this energy trans- mission. They begin by considering a system of a donor molecule and an acceptor molecule of different electronic excitation levels and a single-phonon vibron excitation of the same level as the donor molecule. The oscillatory part of the of the vibron exci- tation may transform with a particular frequency to the energy of solvent oscillations, in which the solvent is considered to be a thermostat, and the excitation energy of the donor molecule may radiate at a particular frequency or transform without radiation to the energy of oscillations in the solvent. Both these processes are considered to be interacting with some field. From the Hamil- tonian of the complete system and of the relaxation processes, a system of differential equations for the probability that either

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DAVYDOV, A. S., et al, Doklady Akademii Nauk SSSR, vol 205, No 5, 1972, pp 1066-1068

molecule will be excited is derived. An approximate linear function for the solution is also obtained. The authors are connected with the Institute of Theoretical Physics, Ukrainian Academy of Sciences, at Kiev.

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ANO 026673

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UR9013

TITLE--   THE PRIDE OF UKRAINIAN SCIENCE

NEWSPAPER-- PRAVDA UKRAINY, FEBRUARY 21, 1970, P 1, COLS 6-7

ABSTRACT--   G. S. PISARENKO, DIRECTOR, THE INSTITUTE OF PROBLEMS
IN STRENGTH OF THE UKRAINIAN ACADEMY /SMCLN/ G. S. PISARENKO,
UKRAINIAN ACADEMICIAN /SMCLN/ V. T. TROSHCHENKO, DEPUTY DIRECTOR
OF THE INSTITUTE, CORRESPONDING MEMBER OF THE UKRAINIAN ACADEMY
/SMCLN/ G. N. TRET YACHENKO, DOCTOR OF TECHNICAL SCIENCES, BOTH
DEPARTMENT CHIEFS OF THE INSTITUTE/SMCLN/ UKRAINIAN ACADEMICIAN
A. S. DAVYDOV, DEPARTMENT CHIEF AT THE INSTITUTE OF THEORETICAL
PHYSICS OF THE UKRAINIAN ACADEMY /SMCLN/ UKRAINIAN ACADEMICIAN
F. D. OVCHARENKO /SMCLN/ N. N. KRUGLITSKIY, DEPUTY DIRECTOR, THE
INSTITUTE OF COLLOIDAL CHEMISTRY AND CHEMISTRY OF WATER OF THE

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19661723

AN0026673

UKRAINIAN ACADEMY, DOCTOR OF CHEMICAL SCIENCES /SMCLN/
S. P. NECHIPORENKO, DOCTOR OF TECHNICAL SCIENCES, DEPARTMENT CHIEF
OF THE INSTITUTE /SMCLN/ E. G. AGABAL,YANTS, CANDIDATE OF CHEMICAL
SCIENCES, SCIENCE ASSOCIATE OF THE INSTITUTE /SMCLN/ I. A. SERIKOV,
DIRECTOR, KHAR,KOV ENGINE CONSTRUCTION PLANT "SERPI MOLOT" /SMCLN/
A. D. POTEYKO, CHIEF ENGINEER OF THE PLANT /SMCLN/ L. M. KARAS,
ACTING DEPUTY CHIEF ENGINEER OF THE PLANT /SMCLN/ B. S. YEREMENKO,
DEPUTY CHIEF OF THE STATE SPECIAL DESIGN BUREAU, ET AL, HAVE BEEN
AWARDED THE UKRAINIAN STATE PRIZES FOR 1969.

19661724

1/2   025
TITLE--ELECTRON EXCITATIONS AND LATTICE VIBRATIONS IN MOLECULAR CRYSTALS
-U-

UNCLASSIFIED   PROCESSING DATE--20NOV70

AUTHOR--DAVYDOV, A.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 483-9

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--EXCITATION ENERGY, ELECTRON, CRYSTAL LATTICE VIBRATION,
MOLECULAR CRYSTAL, ABSORPTION BAND SPECTRUM, DEPOLARIZATION, MATHEMATIC
EXPRESSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1265   STEP NO--UR/0048/70/034/003/0483/0489

CIRC ACCESSION NO--AP0124916
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0124916
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE SUBJECT IS DISCUSSED IN
THE FOLLOWING SECTIONS. INTERACTION OF ELECTRON EXCITATIONS WITH
LATTICE VIBRATIONS. SELF CONSISTENT ELECTRON EXCITATIONS IN MOL.
CRYSTALS. DEPOLARIZATION OF ABSORPTION BANDS IN MOL. CRYSTALS.
RADIATIONLESS ELECTRON EXCITATION ENERGY TRANSFER BETWEEN IMPURITY MOLS.
IN CRYSTAL. LONG WAVE EDGE OF ABSORPTION BAND. UHRBACH RULE. ALSO,
MATH. EXPRESSIONS COVERING THE DISCUSSED AREA ARE PRESENTED.
FACILITY: INST. TEOR FIZ., MOSCOW, USSR.

UNCLASSIFIED

UNCLASSIFIED
PROCESSING DATE--20NOV70
TITLE--EFFECT OF NONAQUEOUS SOLVENT ON THE EXCHANGE ADSORPTION OF
ALIPHATIC AMINES -U-

AUTHOR-(02)-PETRISHCHEV, K.P., DAVYDOV, A.T.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 499-503

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ADSORPTION, ALIPHATIC AMINE, ION EXCHANGE RESIN, METHANOL,
SOLVENT ACTION/(U)KU2 ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1194   STEP NO--UR/0076/70/044/002/0499/0503

CIRC ACCESSION NO--AP0128612

UNCLASSIFIED

CIRC ACCESSION NO--AP0128612

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN STATIC CONDITIONS THE EXCHANGE
SORPTION OF NH SUB4 PRIME POSITIVE, MENH SUB3 PRIME POSITIVE, MENH SUB2
PRIME POSITIVE, ME SUB2 NH PRIME POSITIVE, HOCH SUB2 CH SUB2 NH SUB3
PRIME POSITIVE, AND ET SUB3 NH PRIME POSITIVE FROM MEOH AND AQ. SOLNS.
OF CORRESPONDING CHLORIDES ON THE CATION EXCHANGER KU,2 IN THE H AND CA
FORMS WAS STUDIED. THE SOLNS. OF CONCNS. OF 0.01-0.1 N WERE USED. THE
ION EXCHANGE EQUIL. WAS ESTABLISHED IN AQ. OR MEOH SOLNS. DURING 48 OR
240 HR, RESP. A MAJOR EFFECT OF THE CHEM. NATURE OF A SOLVENT USED ON
THE VALUE OF THE EXCHANGE ADSORPTION IN COMPARISON WITH PHYS. PROPERTIES
OF A SOLVENT IS DEMONSTRATED. AT THE EXCHANGE IN MEOH SOLNS. ON H OR CA
FORMS OF THE CATION EXCHANGER KU,2 THE FOLLOWING ADSORPTIVITY SERIES
WERE FOUND: HOCH SUB2 CH SUB2 NH SUB3 PRIME POSITIVE EQUALS ME SUB3 NH
PRIME POSITIVE LARGER THAN MENH SUB3 PRIME POSITIVE LARGER THAN NH SUB4
PRIME POSITIVE ME SUB2 NH SUB2 PRIME POSITIVE LARGER THAN ET SUB3 NH
PRIME POSITIVE, OR MENH SUB3 PRIME POSITIVE LARGER THAN ME SUB2 NH SUB2
PRIME POSITIVE LARGER THAN ME SUB3 NH PRIME POSITIVE EQUALS NH SUB4
PRIME POSITIVE LARGER THAN HOCH SUB2 CH SUB2 NH SUB3 PRIME POSITIVE
LARGER THAN ET SUB3 NH PRIME POSITIVE, RESP. AT THE SAME TIME, VALUES
OF THE EXCHANGE ADSORPTION IN MEOH AND AQ. SOLN. ARE VERY SIMILAR FOR
THE CASE OF THE H FORM SOLN. OF KU,2 WHILE ON THE CA FORM OF KU,2 THE
SORPTION FROM MEOH IS SMALLER BY A FACTOR OF 2 THAN THAT FROM AQ. SOLNS.
THIS DIFFERENCE IS CAUSED BY THE DIFFERENT DIMENSIONS OF SOLVATED AND
HYDRATED CATIONS.

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0128612   PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--THE SORPTION OF ET SUB3 NHCL IS SMALLER BY A FACTOR OF 4.5 THAN THAT OF THE OTHER AMINES AND SMALLER BY A FACTOR OF 20 THAN THAT ON THE H FORM OF KU,2. PROD. ORG. SIN., MOSCOW, USSR.   FACILITY: GOS. INST.AZOTN. PROM.

UNCLASSIFIED

TITLE--PREPARATION OF METHANOL WITH LOW ELECTRICAL CONDUCTIVITY -U-

AUTHOR-(03)-PETRISHCHEV, K.P., KARAYEV, M.M., DAVYDOV, A.T.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (2), 22-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METHANOL, ELECTRIC CONDUCTIVITY, FILTRATION, CATION EXCHANGE
RESIN, ANION EXCHANGE RESIN/(U)KU2 ION EXCHANGE RESIN, (U)AVL7 ION
EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0750   STEP NO--UR/0436/70/000/002/0022/0024

CIRC ACCESSION NO--AP0119657
                         UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0119657

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEOH OF HIGH PURITY AND LOW ELEC. COND. WAS OBTAINED BY FILTRATION OF COM. MEOH THROUGH H,FORM CATIONITE KU,2, AND THEN THROUGH THE OH,FORM OF ANIONITE AV,17 OR THROUGH A MIXT OF BOTH. THE COND. DECREASED FROM 8 TIMES 10 PRIME NEGATIVE7 TO 5.0 TIMES 10 PRIME NEGATIVE8 OHM PRIME NEGATIVE1 CM PRIME NEGATIVE1. THE ESTER AND ALDEHYDE CONTENT DIMINISHED BY 50PERCENT, THE AMT. OF N CONTG. COMPDS. WAS REDUCED FROM 0.68 TO 0.01 MG-L. AND OF VOLATILE FE COMPDS. FROM 0.038 TO 0.012 MG-L.   FACILITY: SEVERODONETSK, FILIAL, GIAP. SEVERODONETSK, USSR.

UNCLASSIFIED

TITLE--DYNAMICS OF ANION EXCHANGE IN ALCOHOLIC AQUEOUS MEDIA -U-

AUTHOR-(03)-TOLMACHEVA, YU.A., DAVYDOV, A.T., DROBNITSKAYA, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1) 194-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE RESIN, ETHANOL, AQUEOUS SOLUTION, CHLORINATED
  ORGANIC COMPOUND, NITRATE, THIOCYANATE/(U)AB17 ION EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0474   STEP NO--UR/0076/70/044/001/0194/0197

CIRC ACCESSION NO--AP0107080
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0107080
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE DEPENDENCE OF THE ION EXCHANGE
   CONSTS. OF THE SYSTEMS RCL-NO SUB3 PRIME NEGATIVE AND RCL-NCS PRIME
   NEGATIVE ON THE COMPN. OF H SUB2 O-ETOH MIXTS. WAS DETD. BY USING THE
   AB-17 ION EXCHANGE RESIN.   INCREASED ETOH CONTENT LEADS TO A BROADENING
   OF THE SORPTION FRONT, ASCRIBED TO A REDN. OF THE ION DIFFUSION RATE IN
   THE RESIN GRAIN.

UNCLASSIFIED

1/2   017   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--TRIS, DIFLUOROAMINO, FLUOROMETHANE -U-

AUTHOR-(04)-FOKIN, A.V., GALAKHOV, V.S., RADCHENKO, V.P., DAVYDOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,758
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL SYNTHESIS, METHANE, AMINE
DERIVATIVE, GUANIDINE, FLUORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1740
                                     STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0132006
                          UNCLASSIFIED

2/2   017   UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AA0132006
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TRIS(DIFLUOROAMINO)FLUOROMETHANE
(I) WAS PREPD. BY TREATING GUANIDINE DERIVS. WITH FREE F, DILD. WITH AN
INERT GAS, DURING COOLING FROM PLUS 30 TO MINUS 60DEGREES. INORG. SALTS
OF GUANIDINE WERE USED TO INCREASE THE YIELD OF I.

UNCLASSIFIED

DAVYDOV, B. E.

UDC: 541.6

CURRENT STATE OF INVESTIGATIONS OF ORGANIC SEMICONDUCTORS

Systematic investigations in the area of organic semiconductors started mainly after World War II and were stimulated by the search for new technically suitable semiconducting materials. A definite stimulus was given by the work of A. Szent-Gyorgyi, who pointed out that many biological objects are organic semiconductors. As it was made clear, a number of processes in living organisms, for example, photosynthesis and color vision, can be described within the framework of a semiconductor model, and therefore investigation of phenomena taking place in organic semiconductors ought to help in solving fundamental biological problems.

A new stage in the development of organic semiconductors is connected with the successes of polymer science, in particular the chemistry and physical chemistry of polyconjugated systems and polymer complexes with charge transfer. On that path prospects of creating materials combining semiconductor and valuable structural properties are being opened up.

By now a number of methods have been developed for the obtaining of organic semiconductors, ways to deliberately change their properties have been found, and physical effects characterizing them have been discovered and are being studied. The results of that work permit designating the main directions of the further development of investigations and the practical use of organic semiconductors.

To make the essence of the problem clearer, one should dwell on the main properties of organic semiconductors -- a broad class of organic substances which have electronic conductivity: molecular crystals of aromatic substances, dyes, complexes with charge transfer, and polymers with conjugated bonds.

JPRS 54678
10 Dec 1971

USSR   UDC 577.391:547.436

DAVYDOV, B. I.

"Quantitative Assay (According to Toxic Effect) of Absorption and Elimination
of Cystaphos, S, β-Aminoethylisothiuronium, and 5-Methoxytryptamine
Following Intraperitoneal and Intragastric Injection"

Abstract: Regression equations were formulated for cystaphos and AET elimina-
tion from the gastrointestinal tract of mice following intraperitoneal injec-
tion. The The disappearance rate ($T_2^{\frac{1}{2}}$) for cystaphos was found to be 90
minutes. Cystaphos activity shows a clearer relationship between absorption
and disappearance rate than cystamine, and is absorbed from the gastrointesti-
nal tract more quickly. AET is eliminated more slowly: $T_2^{\frac{1}{2}}$ = 132 minutes.
5-MOT is eliminated rapidly following intraperitoneal injection: $T_2^{\frac{1}{2}}$ = 5-10
minutes. When 5-MOT was administered intragastrically, a phase of increased
stability was observed, but $T_2^{\frac{1}{2}}$ remained about the same. Absorption curves
for the three agents were found to closely parallel previously estimated
curves. The study showed that the toxic effect of these aminothiols lasts
longer than their radioprotective activity. This method of evaluating radio-
protectors cannot replace others, but it can provide information about
aminothiol activity in the organism.
1/1

USSR   UDC 577.391:547.436

VASIN, M. V., DAVYDOV, B. I., and ANTIPOV, V. V.

"Comparative Elimination of the Radiation-Protective and Toxic Action
of Cystamine"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 517-521

Abstract: On the basis of data obtained in experiments on mice, a comparative
evaluation of the reduction of the radiation-protective and toxic effects of
cystamine in connection with the elimination of this drug was carried out.
Methods described by B. I. Davydov in the book Problemy Kosmicheskoy Biologii
(Problems of Space Biology), Vol 14, p 137, 1971, were applied. T_{50} of
cystamine on irradiation with gamma-rays in a dose of 900 r at a dosage
rate of 139 r/min was 0.8 hr on the basis of its radiation-protective effect
while it was 1.8 and 2.3 hrs in regard to its toxic action on non-irradiated
and irradiated animals respectively.   Elimination of S^{35} from the spleen,
liver, and entire body of the experimental animals on intraperitoneal ad-
ministration of ^{35}S-cystamine (= S^{35}-cysteamine) in a dose of 150 mg/kg did
not correspond to the reduction in the radiation-protective or toxic effect.
While during the first hour after administration there was a close correla-
tion between the protective effect of cystamine and its concentration in
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USSR

VASIN, M. V., et al., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 517-521

organs sensitive to radiation, this correlation became less pronounced during
the following 4 hrs. Although during the first hour the concentration of
S^{35}-cystamine = S^{35}-cysteamine in radiation-sensitive organs dropped to
55.3-66.0% of the initial level, the toxic action during this time remained
practically unchanged. This can be explained in part by the formation from
cystamine of products that were more toxic than the parent substance. After
the first hour the reduction of the toxic action corresponded more closely
to the elimination of S^{35}.

2/2

ANTIPOV, V. V., VASIN, M. V., DAVYDOV, B. I., SAKSONOV, P. P., and SMIRNOVA, N. V.

"Sensitivity of Mice to Radioprotectors From the Amino Thiol and Indolyl Alkyl Amine Series During the Aftereffect of Transverse Overloads"

Translation: Mice were subjected to the action of overloads (centrifugation; 10 and 30 units 15 minutes, 40 units 10 minutes), and cystamine dihydrochloride (I; 180-350 mg/kg), S,β-aminoethylisothiouronium bromide (AET; 160-220 mg/kg), 5-methoxytryptamine (II; 180-240 mg/kg) or monosodium salt of β-aminoethylthiophosphoric (III; cystaphos; 800-1200 mg/kg) was injected intraperitoneally five minutes to 24 hours later. A slight increase in resistance to the amino thiols (I, III) was noted immediately after centrifugation, and a reliable increase in sensitivity to I and AET in 30 minutes; the reaction of the animals returned to normal in one hour. II, administered one day after overload, raised the animals' resistance. The animals' resistance to I rose with an increase in the intensity of the overloads.
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USSR   UDC 577.1:615.7/9

DAVYDOV, B. I., and GAYDAMAKIN, N. A.

"Effect of Radioprotectors From the Mercaptoalkyl Amine Group (S,β-Amino-
ethylisothiuronium) on the Resistance of Animals to Transverse Overloads"

V:sb. Probl. kosmich. biol. (Problems in Space Biology -- Collection of Works),
Vol 14, Moscow, "Nauka" (Science), 1971, pp 7-25 (Russian) (from RZh-
Biologicheskaya Khimiya, No 20, 25 Oct 71, Abstract No 20F1715 from summary)

Translation: A study using mice and rats was made of the effect of cystamine
(I) and S,β-aminoethylisothiouronium bromide hydrobromide (AET; doses 50-150
mg/kg intraperitoneally) on the resistance (survival rate) of animals to
overloads (centrifugation, 44.4 units; 30 min to 24 hours after injection
of I or AET). An equation was obtained describing the relationship between
the dose causing animals' death given 10-minute centrifugation and the action
of I and AET. Four hours after injection of radioprotectors resistance to
overloads becomes normal. Reduction with time in the depressant action of I
and AET is due to "elimination" of the pharmacological (toxic) effect. The
authors assume that one of the possible mechanisms whereby the organism's re-
sistance to overloads is lowered under the influence of I is the decrease in
the glycogen reserves of the liver.
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USSR   UDC 577.1:615.7/9

DAVYDOV, B. I., and KOZLOV, V. A.

"Effect of Monosodium Salt of β-Aminoethylthiophosphoric Acid on Animals'
Resistance to Transverse Overloads"

Translation: Mice were injected intraperitoneally with cystaphos (I; 100-
450 mg/kg), and from 30 min to five days later the animals were subjected to
overload (centrifugation, 44 units). An equation was obtained describing
the dependence of the animals' resistance to overloads 30 min after I on the
dose of I. It is shown that the deathrate of the animals did not differ from
control when exposed to overloads four hours to five days after injection of
I in a dose of 300 mg/kg.

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UDC 577.1:615.7/9

GAYDAMAKIN, N. A., KUL'KIN, S. G., DAVYDOV, B. I., and SHASHKOV, V. S.

"Effect of Pharmacological Agents on Reactivity of Organism to Combined Exposure to gamma-Irradiation and Transverse Overloads"

V sb. Probl. kosmich. biol. (Problems in Space Biology -- Collection of Works), Vol 14, Moscow, "Nauka" (Science), 1971, pp 336-350 (Russian) (from RZh-Biologicheskaya Khimiya, No 20, Oct 71, Abstract No 20F1714 from conclusions)

Translation: Male mice of the C57BL strain were subjected to gamma-ray irradiation with Co-60 in a dose of 350 or 700 roentgens (dose rate 18 roentgens/min), and a day later to overloads in the amount of 10 units for 30 min (centrifuge). The effect of these factors was studied in an experimental group of animals against a background of the combined injection, 15-30 min prior to irradiation, of 75 mg/kg each of cystamine and S,ß-aminoethylisothiuronium (AET). It was established that the effect of the overloads one day prior to irradiation decreases radiation damage to the hematopoietic organs, while in the event of such exposure a day after irradiation there was observed an insignificant intensification of radiation depletion of the spleen and bone marrow and an increase of destructive lesions in the peripheral nervous system. Cystamine
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USSR

GAYDAMAKIN, N. A., et al., Probl. kosmich. biol. (Problems in Space Biology --
Collection of Works), Vol 14, Moscow, "Nauka" (Science), 1971, pp 336-350
(Russian) (from RZh-Biologicheskaya Khimiya, No 20, Oct 71, Abstract No
20F1714 from conclusions)

in conjunction with AET has an antiradiation protective effect both in case
of irradiation without overloads and in case of their combined action. In
the latter case nonuniform damage to various divisions of the peripheral
nervous system is noted.

USSR, RSFSR

Rpt 25 Jun 70

The article "To Increase Output of Spare Parts" concerns a check by the Committee of People's Control USSR of complaints of a shortage of spare rubber components for motor vehicles and motorcycles in the trade network, including rubber components, hoses, and tires. The check showed that enterprises of the rubber industry had the capability to meet demand for these items but that an abnormal situation arose because the Ministry of Petroleum-Refining and Petrochemical Industry,

PARFENOV, Comrade, Dep Minister, and

MILOV, Comrade, Chief, Main Administration of Industrial Rubber Goods and Rubber Footwear Industry (Glavrezinprom), Main Administrations for Material and Technical Supply, GOSSNAB USSR,

MAKSIMENKOV, Comrade, Chief, Soyuzglavavtosel'mash /Main Administration for Interrepublic Deliveries of Automobiles, Tractors, Agricultural Machines and Their Spare Parts/, and

KOROBKOV, Comrade, Chief, Soyuzglavkhim /Main Adm for Interrepublic Deliveries of Chemical and Industrial Rubber Products/, and the Ministry of Trade USSR,

DAVYDOV, Comrade, Dep Minister of Trade USSR, and Ministry of Trade RSFSR,

SARUKHANOV, Comrade, Dep Minister of Trade RSFSR,

did not take proper measures for fulfillment of a decree of the Council of Ministers USSR on improvement of the supply of spare parts for motor vehicles and other transport equipment belonging to individual owners.

The above organizations were ordered to eliminate the exposed shortcomings.

Izvestiya, 25 Jun 70, p 4, col 1

(6)

USSR   UDC: 51:330.115

DAVYDOV, E. G., RINGO, N. I.

"Problems of Optimum Control in Open Dynamic Production Models"

V sb. Kibernetiku -- na sluzhbu kommunizmu (Cybernetics to the Service of
Communism--collection of works), T. 6, Moscow, "Energiya", 1971, pp 133-172
(from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V752)

Translation: The authors consider open linear dynamic production models
in which fixed and working capital make up the import. Expenditures for
obtaining a given amount of goods by a predetermined time are minimized.
It is assumed that the controlling parameters are the rates of expenditures
for acquiring the fixed and working capital. Models are considered for
various types of restrictions on the region of variation of the control-
ling parameters. The apparatus of the L-problem of moments is worked out
for a region of simplex type. Explicit solutions for macromodels are found
and studied. D. Epshteyn.

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                                   - 31 -

USSR

UDC 51:330.115

DAVYDOV, E. G.

"The Distribution of Resources in Nets"

Sistemy Raspredeleniya Resursov na Grafakh [Systems for Distribution of Resources on Graphs -- Collection of Works], Moscow, Acad. Sci. USSR Computer Center, 1970, pp 31-48, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V556 by the author).

Translation: Nets with resources are studied and theorems are proven, the sense of which can be reduced to the fact that operations ending at a certain point must be completed at the same time; otherwise, resources allocated for some of the operations are excessive. Similar statements for resources of the most general form are incorrect; therefore, in proving these facts, assumptions must be found, within the limits of which the statments are true.

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"Games with Resources"

Translation: The following antagonistic game is studied. The players have
certain quantities of means for servicing of certain objects at their dispo-
sal. The use of each means of servicing involves expenditures of resources,
the reserves of which are limited. The winnings of the first player depend
on how each object is serviced by both players. When each player has a
finite number of means for servicing at his disposal, the game is reduced to
a matrix game, while when each means corresponds to a point on the sector
[0, 1] the game is reduced to a continuous game on a square.

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UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--PREPARATION OF GAS TURBINE FUELS OF IMPROVED QUALITY FROM DISTILLATES FROM COKING PETROLEUM RESIDUES AT HIGH PRESSURE -U-

AUTHOR-(05)-ROGACHEVA, O.I., SYUNYAYEV, Z.I., GIMAYEV, R.N., DAVYDOV, G.F., ZORIN, V.I.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (2), 6-8

DATE PUBLISHED------70

SUBJECT AREAS--PROPULSION AND FUELS, MATERIALS

TOPIC TAGS--COKE, PETROLEUM PRODUCT, VANADIUM, SULFUR, KEROSINE, GAS TURBINE FUEL, INDUSTRIAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1519

STEP NO--UR/0318/70/000/002/0006/0008

CIRC ACCESSION NO--AP0118506

UNCLASSIFIED

CIRC ACCESSION NO--AP0118506   UNCLASSIFIED   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KEROSINE GAS OIL DISTILLATES
WERE IMPROVED WHEN DELAYED COKING WAS CARRIED OUT AT 6 ATM. FUELS
CONTG. 0.0004PERCENT ASH AND 0.000072PERCENT V WERE THUS OBTAINED EVEN
WITH COKING INTAKE STOCK FROM HIGH S PETROLEUMS. THE YIELDS OF COKE
WERE ALSO INCREASED 6-9PERCENT. CHARACTERISTICS OF THE RESIDUES AND
FUELS OBTAINED AND EXPTL. DATA ARE PRESENTED. 7 REFERENCES.
FACILITY: UFIM. NEFT. INST., UFA, USSR.

UNCLASSIFIED

Entomology

USSR

UDC 576.895.4

DAVYDOV, G. S., and MOROZOVA, I. V., Institute of Zoology and Parasitology ~~Imeni~~Academician Ye. N. Pavlovskiy, Academy of Sciences Tadzhik SSR, and Central Asian Scientific Research Antiplague Institute

"Gamasid Mites of Western Tadzhikstan. I."

Dushanbe, Izvestiya Akademii Nauk Tadzhikskoy SSR, Otdeleniye Biologicheskikh Nauk, No 3(40), 1970, pp 72-78

Abstract: During 1952-1963 approximately 15,000 Gamasid mites were collected in Western Tadzhikstan from small mammals of 21 species. The Gamasid mites found on 5,174 animals examined and in 59 nests belonged to 50 species. The presence of 21 of these species in Tadshikstan was established for the first time. The 50 species of Gamasid mites are listed. On the basis of results obtained in this investigation and literature data, it was concluded that Gamasid mites of 73 species occur in Tadzhikstan.

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USSR

DAVYDOV, G. S., and MOROZOVA, I. V., Institute of Zoology and Parasitology ~~Imeni Academician~~ Ye. N. Pavlovskiy, Academy of Sciences Tadzhik SSR; Central Asian Antiplague Institute

"Gamasid Mites of Western Tadzhikstan. II"

Abstract: A study was made of the distribution of Gamasid mites with respect to species and numbers and changes in their numbers according to seasons on rodents in Western Tadzhikstan. Rodents included the rattlemouse, the white-toothed shrew (Crocidura), several species of suslik (Citellus), the small five-toed jerboa (Allactaga elator), the earth rat, the Turkestan rat, house and forest mice, several species of gerbil, and the mole-vole. Data on the distribution of Gamasid mite preying on rodents in various regions of Tadzhikstan are given in the form of tables. The greatest number of Gamasid species was found in the Vakhshskaya Valley (47 species) and in the mountain foothill and mountain regions of Northern Tadzhikstan (45 species). In the mountain foothill - mountain regions of South-Western Tadzhikstan and the Fergana Valley, 21 and 22-species, respectively, were found.
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1/2   015   UNCLASSIFIED
TITLE--MOTORSHIP VLADIMER IL, ICH IN HAVANA -U-   PROCESSING DATE--13NOV70

AUTHOR--DAVYDOV,-K.

COUNTRY OF INFO--USSR, EAST GERMANY, CUBA

SOURCE--VODNYY TRANSPORT, APRIL 21, 1970, P 1, COLS 2-4

DATE PUBLISHED--21APR70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL
   SCIENCES

TOPIC TAGS--SHIPYARD, SHIPBUILDING ENGINEERING, CARGO SHIP, FOREIGN
   TECHNICAL ASSISTANCE/(U)OLGA ULYANOV SHIP, (U)DMITRIY ULYANOV SHIP,
   (U)ALEKSANDR ULYANOV SHIP, (U)ILYA ULYANOV SHIP, (U)VLADIMIR ILICH SHIP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1250   STEP NO--UR/9028/70/000/000/0000/0000

CIRC ACCESSION NO--AN0110869
                        UNCLASSIFIED

CIRC ACCESSION NO--AN0110869

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VLADIMIR IL, ICH IS THE FIRST
OF A NEW SERIES OF CONTEMPORARY LARGE TONNAGE SHIPS WITH HIGH DEGREE OF
AUTOMATICN. THEY ARE REFERRED TO AS LENIN SHIPS BY THE BUILDERS, THE
GERMAN DEMOCRATIC REPUBLIC. AT THE WARNOV-WHARF, MOTORSHIPS OF
IDENTICAL DESIGN ARE BEING BUILT, IL, YA UL, YANOV, ALEKSANDR UL,
YANOV, DMITRIY UL, YANOV, OL, GA UL, YANOV. THE VLADIMIR IL, ICH SAVED
FOUR DAYS DURING LOADING AND THE PASSAGE. V. KHARCHENKO IS THE
CAPTAIN. THE LOAD OF AGRICULTURAL MACHINERY AND OTHER GOODS WERE TAKEN
ABOARD AT LENINGRAD AND DELIVERED TO HAVANA AND TO SANTIAGO DE CUBA.
THE VLADIMIR IL, ICH AND OTHER SHIPS OF THIS NEW CLASS WILL GO IN
SERVICE OF THE BALTIC FLEET.

UNCLASSIFIED

USSR

UDC 632.95

DAVYDOV, L. A., AMOSOV, G. Ya., and MANDEL'BAUM, Ya. A.

"Construction and Study of a Mathematical Model of the Process of Producing Sinerphos (4-Nitrophenoxydiethylsulfide)"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 11-18 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 22N514 by A. F. Grapov)

Translation: The method of statistical planning of an experiment was used to find the optimum parameters of the process of producing sinerphos from $ClCH_2CH_2SEt$ (I) and $\pi\text{-}NO_2C_6H_4OH$ (II). I:II molecular ratio 1.07, KOH:II molecular ratio 1.45, reaction temperature 85°, time 56 min, yield of $\pi\text{-}NO_2C_6H_4CH_2CH_2SEt$ 88.4%.

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172   024
UNCLASSIFIED
TITLE—OPTIMIZATION OF THE PREPARATION OF SINERPHOS 2 P NITROPHENOXY ETHYL ETHYL SULFIDE BY THE STATISTICAL PLANNING OF AN EXPERIMENT -U-

PROCESSING DATE—30OCT70

AUTHOR-(03)-DAVYDOV, L.A., AMOSOV, G.YA., MANDELBAUM, YA.A.

CCUNTRY OF INFO—USSR

SOURCE—KHIM. PROM. (MOSCOW) 1970, 46(3), 165-7

DATE PUBLISHED————70

SUBJECT AREAS—CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS—ORGANIC NITRO COMPOUND, ORGANIC SULFUR COMPOUND, ORGANIC SYNTHESIS, CHLOROBENZENE, COPPER, INDUSTRIAL BYPRODUCT, CHEMICAL PRODUCT PRODUCTION, INSECTICIDE

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAME—2000/0816

STEP NO—UR/0064/70/046/003/0165/0167

CIRC ACCESSION NO—AP0124483

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO—AP0124483   PROCESSING DATE—30OCT70
ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. THE DIRECT SYNTHESIS OF P O SUB2
NC SUB6 H SUB4 O(CH SUB2)SUB2 SET (NITROFOS) (I) FROM P
NITROCHLOROBENZENE (II) AND HO(CH SUB2)SUB2 SET (III), IN THE PRESENCE
OF KOH AND METALLIC UC, WAS CARRIED OUT IN HCONME SUB2 OR ACNME SUB2 BUT
GAVE LARGE AMT. OF BY PRODUCTS; IN ME SUB2 SO, THERE ARE NO SIDE
REACTIONS. OPTIMIZATION OF THE REACTION CONDITIONS BY A STATISTICAL
PLANNING METHOD SHOWS THAT 87PERCENT I IS OBTAINED WITH 3.3:1 III-II,
1.2:1 KOH II, 0.06:1 CU II AT 34DEGREES WITH REACTION TIME 1.33 HR.

UNCLASSIFIED

USSR

AKHIYEZER, I. A., and DAVYDOV, L. N., Engineering Physics Institute, Academy of Sciences Ukrainian SSR, Khar'kov

"Behavior of Magnetically Ordered Ferroelectrics in a Rapidly Oscillating Electrical Field"

Abstract: The effect of a rapidly oscillating electrical field on a ferro-electric antiferromagnetic in a constant magnetic field H_o was studied. The field frequency was much greater than the frequency of the natural vibrations of the spin system of the crystal. At the critical point of external magnetic field, temperature, and pressure -- where there is a phase transition in the magnetic system of the crystal -- spin waves are excited by a relatively small alternating electrical field. As an example, the case $H_o \sim H_c$ is then analyzed: H_c is the field at which the magnetic moments of sublattices are reversed. It is shown that the electrical field required to excite spin waves is proportional to $1 - (H_o/H_c)$.
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"Possibility of Parametric Excitation of Spin Waves in Magnetical-
ly Ordered Ferroelectrics"

Abstract: The purpose of this paper is to show   that in anti-
ferromagnetic and weakly ferromagnetic crystals parametric excita-
tion of spin waves by an external, varied electric field is possible.
Starting their analysis with the expression for the full macroscopic
energy of a magnetically ordered ferroelectric, with no external
constant electric or magnetic fields, the authors omit the term
corresponding to weak ferromagnetism as leading to a trivial re-
sult. They then obtain expressions for the frequency and rate of
increase of both the activation and activationless parts of the
spin waves. Expressions are also obtained for the frequencies and
increments of the spin oscillations for anisotropic antiferromag-
netics. For the spin oscillations to occur, the increment must ex-
ceed the attenuation decrement caused by interaction of the spin
waves with phonons and heterogeneities in the crystal. The authors
express their gratitude to A. I. Akhiyezer for his comments.
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USSR

AKHIYEZER, I. A.; DAVYDOV, L. N. (Physics and Engineering Institute, Ukrainian Academy of Sciences, Khar'kov)

"A Theory for Electromagnetic Fluctuations in Magnetically Ordered Crystals"

Kiev, Ukrainskiy Fizicheskiy Zhurnal; January, 1971; pp 19-28

ABSTRACT: Fluctuations of quantities characterizing ferromagnetics and anti-ferromagnetics were studied, taking into account the relation between spin waves and electromagnetic waves. This consideration was necessary in the case of relatively long-wave fluctuations (wave lengths of a millimeter or more). Fluctuations in antiferromagnetics with magnetic anisotropies of the easy axis and easy plane types in the nonresonance area as well as in the neighborhood of electromagnetic spin resonance were investigated. The expressions found for the correlators differ substantially from those obtained earlier by the author and others and lead to the latter only in the short-wave region. In addition to fluctuations in antiferromagnetics the authors also made a study of long-wave fluctuations in ferromagnetics.

The article includes 27 equations and 3 figures. There are 6 references.

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USSR

AKHIYEZER, I. A., and DAVYDOV, L. N., Khar'kov State University imeni A. M. Gor'kiy

"Coupled Electromagnetic-Spin Waves in Magnetically Ordered Ferroelectrics"

Abstract: Coupled electromagnetic-spin waves in ferroelectric antiferro-
magnetics characterized by mixed (magnetoelectric and electromagnetic)
susceptibilities in addition to electric and magnetic susceptibilities are
studied. It is pointed out that a considerable number of ferroelectric
magnetically ordered crystals are now known: antiferromagnetics and weak
ferromagnetics. In these crystals the coupling between spin waves and
strictly electromagnetic waves should be of a somewhat different character
than in ordinary antiferromagnetics. This difference is attributed to the
fact that in magnetically ordered ferromagnetics perturbations in the spin
system are related to the electromagnetic field not only through the Maxwell
equations but also directly due to the presence of mixed magnetielectric
and electromagnetic susceptibilities in these crystals along with electric
and magnetic susceptibilities. The spectrum of coupled oscillations both
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USSR

AKHIYEZER, I. A., and DAVYDOV, L. N., Fizika Tverdogo Tela, No 11, Nov 70,
pp 3171-3174

far from and in the neighborhood of electromagnetic-spin resonance is ob-
tained. Close to the point of electromagnetic-spin resonance, instead of
two branches of strictly electromagnetic waves and two (or one) activation
branches of spin waves, there are four (or two) branches of coupled elec-
tromagnetic-spin oscillations.

2/2

USSR

UDC 616-099:614.824

ALEKSANDROV, V. N., BESKHOKHLOV, D. I., and DAVYDOV, O. V.

"Pathogenesis of Powder Gas Poisoning"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 7, 1970, pp 28-30

Abstract: Animal experiments were conducted to determine the accumulation of pyruvic acid in the blood and the changes of catalase activity of hemolyzed blood resulting from a 15 sec exposure to hydrogen peroxide. It was established that the pyruvic acid level in the blood, representing the accumulation of incompletely oxidized glycolysis and gylcogenolysis products, showed an increase after exposure to the powder gases which was directly proportional to the concentration of the gas and to the duration of the exposure. This increase, which is evidently due to a disturbance of oxidation-reduction processes, should be taken into consideration in designing prophylactic or antitoxic agents. The catalase activity of hemolyzed blood also dropped significantly after the animals were exposed to poison gases for 15 min. This decrease was more directly proportional to exposure time than to concentration.

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DAVYDOV, RM

CHEMICAL TRANSFORMATIONS

SINGLE-ELECTRON TRANSFER AND CHEMICAL TRANSFORMATIONS

(Conference in Rostov-on-Don)

[Article by Candidate of Chemical Sciences Z. V. Todres; Moscow, Vestnik Akademii Nauk SSSR, Russian, No 9, September 1973, pp 103-105]

A conference on the role of electron transfers in chemical reactions was held in Rostov-on-Don on 22-25 May. It was organized by the Northern Caucasus Scientific Center of the Higher School; about 40 reports were presented. Participating in the conference were the leading chemical institutes of the AS USSR and the republican academies, and also Rostov-on-Don, Moscow, Leningrad and Gor'kiy universities.

Chemical reactions are usually regarded as the rupture and formation of bonds, that is, the reorrangement of the skeleton of a molecule. It is now considered, however, that the placement of atoms or atomic arrangements is preceded by the transfer of electrons from one of the reacting molecules to the other. The study of that stage, which has become possible through the use of new instrumental methods of investigation, especially of electron paramagnetic and nuclear magnetic resonance, expands concepts of the reaction mechanism as a sequence of elementary stages known to us.

As a result of electron transfer new particles appear, not products were examined in a number of reports. The properties of those chrome C and other enzymes with Fe(III) after electron transfer give nonequilibrium forms in which the iron has already gone over into the state Fe(II) but the protein part still retains its previous configuration (R. M. Davydov). The transformation of 4-4'-dinitro-cis-stilbene into an anion-radical is accompanied by complete cis-trans-isomerization. Destruction of the symmetry of the molecule leads to establishment of equilibrium: 4-nitro-cis-stilbene in the presence of electron transfer gives a mixture

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JPRS 60661, 30 Aug 73

of anion-radicals of cis- and trans-stillbene (Z. V. Todres). In the reports of S. P. Solodovnikov and M. I. Torozkhova it was shown that the properties of the products of electron transfer depend not only on the distribution of electrons over the molecule but also on the entry of these products into the composition of the ionic associates.

Triethylgermyl derivatives of lithium or potassium, as with benzophenol, react in benzene or hexene. Yu. N. Gindyshev has established, giving alcoholates, react in benzene or hexene. A completely different product of triethylgermyl-substituted benzhydrol. A completely different product forms in hexamethyldigermane, side by side with benzophenone ketyl. In other words, in hexamethapol of the existing particle appears the tri-ethylgermyl anion, which reacts further according to a scheme of single-electron transfer. Bimetallic organic compounds such as bis-(triethylgermyl)-mercury or bis-(triethylgermyl)-cadmium are capable of participating in electron transfer also in non-polar solvents of the type of benzene, if a sufficiently strong acceptor, for example tetracyanogen-ethylene, is used (Academician G. A. Razuvayev and G. A. Abakumov).

V. Ts. Kampel and O. Yu. Okhlobystin revealed the general mechanism of the oxidation of organometallic compounds, according to which a single electron is torn away from those derivatives and they simultaneously decompose into an organic radical and the cation of the metal. The radicals, if they do not react chemically, give off still another electron, being oxidized to carbocation. The reaction ends with the stage of stabilization of those cations, for example, through their re-action with molecules of the solvent. The establishment of such a mechanism explains the formation of benzyl acetate as the main product of the oxidation of benzylmercuracetate by lead tetra-acetate in acetic acid. Aliphatic mercury chlorides under the same conditions give ethers of acetic acid, paraffins and olefins. The formation of hydrocarbons in that reaction also indicates the existence of radicals as intermediates of the oxidation.

The ability of organomercuric compounds to act as elec-tron donors was shown on the example of reactions of diaryl mer-cury with tetranitromethane (S. A. Shevelev, I. P. Beletskaya et al.). Upon reacting with nitronium fluoroborate in sulfoliti, diaryl mercury gives an aromatic hydrocarbon and (trinitromethyl)-aryl mercury as the main product and a certain quantity of ArNO₂. results agree with the hypothesis that in the first stage of the reaction the cation-radical of diaryl mercury and the radical ·NO₂ form. The latter forms through electron transfer either to the nitronium cation or to the tetranitromethane. The cation-radical of diaryl mercury decomposes, giving the highly reactive radical Ar·. That radical reacts insignificantly with the lowly reactive

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AA0040658

UR 0482 1-70

Soviet Inventions Illustrated, Section I Chemical, Derwent,

241166 MULTILAYER PIPES WITH A COMPLEX INNER OR
OUTER PROFILE, e.g. for resonators or wave
guides, are usually manufactured by die casting.

Now in order to simplify the manufacturing technology
and increase economy, the middle layer is obtained
by pouring the melt into the cavity between the
outer and the inner layers. One of the layers is
formed by the circumference, the other is formed by
the configuration of the thin-walled profile of the
pipe.
5.5.68 as 1238218/25-8. B.P. SOKOLOV et alia.
MOSCOW AVIATION INST. (15.8.69) Bul 13/1.7.69.
Class 47f. Int.Cl.F 161.

LD

AUTHORS: Sokolov, B. P.; Vysotskiy, A. I.; and Davydov, S. I.
Moskovskiy Aviatsionnyy Tekhnologicheskiy Institut

19750247

HAUU10437

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, /-70

241858   SHUT OFF VALVE with higher reliability
.of the seal, which is achieved by in-
corporating a wedge-lever mechanism (4) between
the two valve discs. When the valve spindle
(8) is raised, the discs are forced on to the
valve seats. When the valve is opened, the
discs must be released by winding the spindle
partially down. Then the valve can be rotated
into the open position by square head (9) on the
spindle. Then the spindle is completely screwed
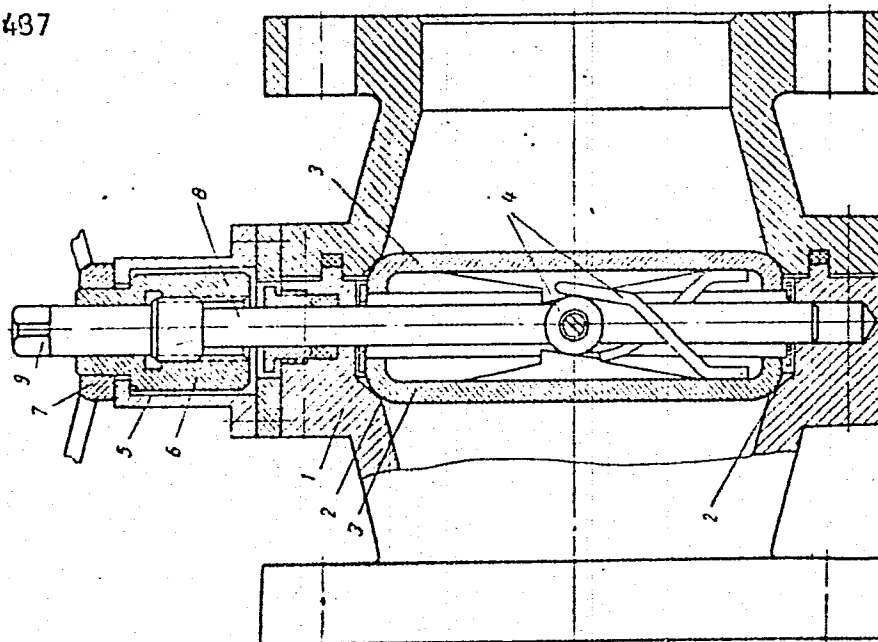down, which locks the valve into the open
position.
23.6.66. as 1084981/25-8, DAVYDOV. S.I. (29.8.69)
Bul. 14/18.4.69. Class 47g, Int. Cl. F 16k.

18

19781660

AA0046437

19781661

USSR

DAVYDOV, S. S., Doctor of Technical Sciences, Professor, and DARBAKADZE, V. Sh, Candidate of Technical Sciences

"Model Studies of Reinforced Concrete Structures in All Stages of Operation"

Abstract: Ordinary and prestressed reinforced concrete beams can be tested for load-bearing capacity, deformation and cracking using models of identical materials, observing the rules of similarity, with geometric scales of 1:7 and 1:9. In more complex structures, when it is impossible to solve this problem analytically considering the geometric and physical nonlinearity, the method of model planning can be used with proper performance of tests. The recommendations of this article are particularly applicable to the middle zone of reinforced concrete beams where a constant bending moment is in effect.

1/1

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1/2   015   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--DEFECTS IN SEMICONTINUOUSLY CAST PIPE -U-

AUTHOR--KRIVOSHEYEV, A.YE., OZIMIN, YU.S., KHAKHALIN, B.D., DAVYDOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, (1) 7-9

DATE PUBLISHED-------70

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

TOPIC TAGS--METAL CRACKING, METAL CASTING, CONTINUOUS CASTING, METAL PIPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1319   STEP NO--UR/0128/70/000/001/0007/0009

CIRC ACCESSION NO--AP0106096
                    .   UNCLASSIFIED

UNCLASSIFIED

2/2   015
CIRC ACCESSION NO--AP0106096
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   WITH THE PURPOSE TO ELUCIDATE THE
CRACK FORMATION IN TITLE CASTING THE STUDY WAS CARRIED OUT ON THE TEMP.
FIELD ACROSS THE SECTION OF THE TITLE PIPE DURING ITS SOLIDIFICATION.
THE TEMP. OF CAST IRON (C 3.5-3.7, SI 2.0-2.3, MN 0.6-0.8, P 0.2-0.3,
AND S SMALLER THAN OR EQUAL TO 0.1 WT. PERCENT) BEFORE CASTING WAS
1280-1300DEGREES, AND THE WITHDRAWAL RATE WAS 1.0-1.1 AND 0.7-0.8 M-MIN.
DIAM. OF PIPES WAS 500 AND 700 MM.   THREE ZONES OF SOLIDIFICATION WERE
DISTINGUISHED: (1) PERIOD OF EXPANSION PRIOR TO SHRINKAGE, (PES), (ZONE
OF TIGHT CONTACT OF THE CASTING ALONG 40PERCENT OF MOLD HEIGHT), (2)
PERIOD OF FOUNDING PREPEARLITE SHRINKAGE (ZONE OF THE GAP BETWEEN THE
CASTING AND MOLD (PFPS), AND (3) FINISHING PERIOD OF FULL SHRINKAGE,
(FPCS) (ZONE OF COOLING OUTSIDE OF THE MOLD). EXPERIENCE AT FOUNDRIES
HAS SHOWN THAT CAST IRONS WITH HIGH VALUES FOR PES AND LOW VALUES FOR
PFPS HAVE PRACTICALLY NO CRACK FORMATION. BEST RESULTS WERE PRODUCED
WITH EUTECTOIDAL AND TRANSEUTECTOIDAL CAST IRON IN PARTICULAR (C
3.7-3.8, AND SI 2.2-2.3 WT. PERCENT). ONE OF THE CAUSES OF CRACK
FORMATION IS THE FORMATION OF A TOO THIN PRIMARY CRUST ON CRYSTD. METAL
WITH NONUNIFORM FORMATION OF A GAP BETWEEN THE PIPE SURFACE AND THE
MOLD. THE SUPERHEATING OF THE CAST IRON MAY HAVE COUNTERACTING EFFECTS
BOTH FAVORING AND INHIBITING THE CRACK FORMATION.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--23OCT70

1/2   015
TITLE--SPECTRAL AND ENERGY MANIFESTATION OF THE INTERACTION OF THE
  HYDROXYL GROUPS OF A SILICA SURFACE WITH TRIETHYLAMINE, PYRIDINE,
AUTHOR-(03)-DAVYDOV, V.YA., KISELEV, A.V., KUZNETSOV, B.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 1-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TRIETHYLAMINE, DIOXANE, FURAN, HYDROXYL RADICAL, ADSORPTION,
  SILICA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1995/1399   STEP NO--UR/0076/70/044/001/0001/0008

CIRC ACCESSION NO--AP0116846
                        UNCLASSIFIED

2/2   015
CIRC ACCESSION NO--AP0116846   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIFFERENCES OF THE ADSORPTION HEAT
(DELTAQ SUBOH) OF ET SUB3 N, PYRIDINE (I), DIOXANE (II), AND FURAN (III)
ON A HYDROXYLATED SURFACE OF SILICA GEL WERE MEASURED. THE CHANGES OF
THE VIBRATIONAL FREQUENCY (DELTANU SUBOH) OF HYDROXYL GROUPS AFTER
ADSORPTION OF ET SUB3 N, I, II, AND III ON SILICA GEL WERE DETD. THE
ENERGY OF THE SPECIFIC INTERACTION OF THE SURFACE HYDROXYL GROUPS WITH
ADSORBATES DECREASED STRONGLY WHEN ELECTRON D. IN THE ADSORBATE MOL. WAS
DISTRIBUTED MORE UNIFORMLY DUE TO THE MOL. CONJUGATION. DELTAQ SUBOH
AND DELTANU SUBOH WERE APPROX. PROPORTIONAL FOR WEAK SPECIFIC
INTERACTIONS. WHEN THE SPECIFICITY INCREASED, DELTANU SUBOH INCREASED
MORE RAPIDLY THAN DELTAQ SUBOH. CHEM. AND PHYS. HETEROGENEITY WAS
DISPLAYED MORE DISTINCTLY AT WEAK INTERACTIONS.   FACILITY: MOSK.
GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr.: ___AP0042572___

Ref. Code: ___UR0033___

JPRS 50162

Halo Phenomena in the Martian Atmosphere

(Abstract: "Halo Phenomena in the Martian Atmosphere on Ice and Unknown Crystals," by V. D. Davydov, Institute of Space Research; Moscow, Astronomicheskiy Zhurnal, Vol 47, No 1, 1970, pp 172-178)

Cases of correspondence between some terrestrial and Martian halos were found on two independent graphs of the activity distribution of unusually brightness formations on Mars on the basis of phase angles. This correspondence can be considered evidence of the presence of hexagonal ice crystals in the Martian atmosphere. In addition, the graphs reveal maxima which have no analogy to known types of halos. The problem of whether these maxima can be identified with solid carbon dioxide requires special investigation. One of the unknown maxima consists of halo phenomena primarily in the "warm" regions of Mars and therefore can scarcely be caused by CO_2 crystals. It is not impossible that this maximum is caused by particles of Martian ground which have been temporarily carried into the atmosphere. In such a case the ground particles must be transparent and almost colorless with diameters at least two orders of magnitude exceeding the effective wavelength of light in the visible region of the spectrum. (This article

/ 2-

AP0042572

is a direct continuation of four earlier articles by the same author:
Astron. Tsirkulyar, No 492, 1968; Astron. Zh., 46, 1969, 623, 1074; Dokl.
AN SSSR, 189, I, 1969).

19760556

TITLE--THE MARTIAN OPPOSITION EFFECT AND CERTAIN POSSIBLE PECULIARITIES OF
 THE STRUCTURE OF CRYSTALS IN THE MARTIAN ATMOSPHERE -U-

AUTHOR--DAVYDOV, V.D.

COUNTRY OF INFO--USSR

SOURCE--ASTRONOMICHESKII ZHURNAL, VOL. 47, NO. 2, 1970, P. 446-449

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--MARS PLANET, PLANETARY ATMOSPHERE, ICE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1769   STEP NO--UR/0033/70/047/002/0446/0449

CIRC ACCESSION NO--AP0125385
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0125385

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   ANALYSIS SHOWING THAT THE INCREASE
   IN MARTIAN BRIGHTNESS OBSERVED AT PHASE ANGLES ON THE ORDER OF 1 DEG
   (OPPOSITION EFFECT) MAY BE CONSIDERED AS AN INDICATION FOR THE PRESENCE
   OF TRANSPARENT CUBIC CRYSTALS IN THE MARTIAN CLOUDS.   IT IS SHOWN THAT
   THESE CRYSTALS CAN CONSIST OF LOW TEMPERATURE ICE, AND THAT THEY CAN
   PRODUCE A 'SUPEREFFECT' AND MARTIAN PHASE ANGLES LESS THAN 0 DEG 8 SEC.
      FACILITY: AKADEMIIA NAUK SSSR, INSTITUT KOSMICHESKIKH
   ISSLEDOVANII, MOSCOW, USSR.

UNCLASSIFIED

USSR

DAVYDOV, V. G., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 128-133

hot-rolling and cold plastic deformation, or the extent of deformation. Chemucal composition of alloys has a definite influence on the strength characteristics of samples. Increase in the tensile strength of alloys 1 and 3 deformed immediately after the water quenching was 4-5 kg/mm^2 in the presence of 83% deformation, and it amounted to 11-12 kg/mm^2 for samples deformed from 4.5 to 10 days after the water quenching. When deformation was only 50%, the increase in tensile strength amounted to 0-1 and 7-8 kg/mm^2 for the two time intervals, respectively. Increase in the yield strength exceeded by 7-8 kg/mm^2 the tensile strength during corresponding time periods. Alloys 1 and 3 which were artificially aged at $140^\circ C$ and deformed by 83% immediately after the aging, 3, and 4.5 days after the aging showed a decrease in their mechanical properties. This decrease had a direct relation between the time elapsed between hardening and the cold deformation. A combination of hardening with hot deformation (HLTMT), followed by cooling in air or water and deformation 108 hours after cooling showed that the difference in strength characteristics of alloys 1 and 2 (deformed by 83%) cooled in water and air was 1-25 kg/mm^2, and it was 8-10 kg/mm^2 for alloy 3. When the cold deformation was decreased by 2-3 kg/mm^2, and by 7-8 kg/mm^2 when samples were deformed by only 50%. Tabulated data are presented in four tables.

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Transformation and Structure

BER, L. B., VAYNBLAT, YU. M., DAVYDOV, V. G., KHAYUROV, S. S., and SHCHEGLOVA,
N. M., All-Union Institute of Light Alloys

"Substructure Changes and Decomposition Processes in the Double Aging of
Alloy AD-31 Under the Effect of Plastic Deformation"

Abstract: Electron microscopy and mechanical property measurements were
employed to study substructure changes and decomposition processes in alloy
AD-31 in sheet form with a composition of (in %): 0.73 Mg, 0.57 Si,
0.12 Fe, 0.03 Zn, 0.01 Mn, balance -- Al. The sheets were water quenched
from $525^{\circ}C$ and rolled in the cold state (30 and 90% reduction) either after
quenching or after natural aging for one day. Samples were studied after
deformation without subsequent aging and after aging at 155° for five hours.
Out of 13 different combinations of quenching, aging and rolling reduction,
it was found that the best combination of tensile strength and ductility
is achieved by quenching, natural aging for one day, reduction of 90%, and
aging at $155^{\circ}C$ for 0.5 hours. This treatment yielded a TS of 38.3 kG/mm^2,
1/2

USSR

BER, L. B., et al., Fizika Metallov i Metallovedeniye, Vol 36, No 3, 1973, pp 583-590

and elongation of 14.5%. Increasing the aging time from 0.5 hours to 48 hours only reduces strength and ductility. Four figures, two tables, seven bibliographic references.

2/2

USSR   UDC 534.232.46-8

BARYSHEV, S. YE., DAVYDOV, V.G.

"Binary-Comparative Ultrasonic Head"

USSR Author's Certificate No 256327, filed 11 June 68, published 20 Mar 70 (from
RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A428P)

Translation: A binary-comparative ultrasonic head is patented, which differs in
the decreased dimensions, and which contains a piezoelectric element and a circuit
for matching the piezoelectric element with an ultrasonic receiver and generator.
The piezoelectric element is fulfilled in the form of a differential capacitor,
the grounded electrode of which is applied to one of the surfaces of a quartz
oscillator, and two non-grounded electrodes are applied to the opposite side of
the quartz oscillator; and the circuit for matching the piezoelectric element
with the ultrasonic receiver and generator is fulfilled in the form of a transformer,
one of the windings of which is connected with the receiver, and the other (which
has a tap from a central point joining it with the generator) is connected with the
non-grounded electrodes. A circuit for the head is presented. 1 ill. L.K.

1/1

USSR

UDC 681.325.6

DAVYDOV, V. I., Odessa

"Pulse Multithreshold Logical Element made from Tunnel Diodes"

Novosibirsk, Avtometriya, No 2, 1972, pp 105-108

Abstract: A study is made of the problem of constructing tunnel diode multi-
threshold logical elements. The circuit diagrams and the theoretical operating
principles of the elements are discussed. The output characteristics of three
two-threshold elements and a six-threshold logical element based on the inves-
tigated two-threshold logical element are presented and discussed. The multi-
threshold logical element obtained has high stability since the threshold ele-
ments are determined by the maximum currents and tunnel part of the volt-ampere
characteristic of the tunnel diode. The experimental testing of the developed
logical element demonstrates the high speed of the system determined basically
by the cutoff switching frequency of the transistors used, the possibility of
constructing an element with a large number of thresholds, comparative simpli-
city of varying the threshold value which can-be accomplished by varying the
magnitude of the resistor included in series with the tunnel diode or by selec-
ting the tunnel diodes with different maximum currents, and the possibility of
applying the investigated logical element for automation and computer engineering
1/2

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USSR

DAVYDOV, V. VI., Avtometriya, No 2, 1972, pp 105-108

purposes. For synthesis of an element of four or less logical variables the tabular method of D. R. Haring, et al. [IEEE Trans Electron. Comput., Vol 16, No 2, 1967] was used.

2/2

TITLE--ON MICROSPORUM LANOSUM CARRIER STATE IN HEALTHY ANIMALS -U-

AUTHOR--STEPANOVA, ZH.V., DAVYDOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII 1970, NR 3, PP 42-46

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CAT, SKIN, LUMINESCENCE, CULTURE MEDIUM, FUNGUS DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0631   STEP NO--UR/0206/70/000/003/0042/0046

CIRC ACCESSION NO--AP0102617
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0102617
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXAMINATION OF 206 CLINICALLY
HEALTHY CATS FOR CARRIER STATE OF MICROSPORUM LANOSUM WAS CARRIED OUT.
CATS WITHOUT CLINICAL SIGNS ON THE SKIN WERE EXAMINED UNDER A
LUMINESCENT LAMP. IN THE ABSENCE OF LUMINESCENCE HAIR FROM DIFFERENT
SITES WAS COLLECTED FOR CULTURE. FROM 5 CATS CULTURES OF GROWING M.
LANOSUM WERE OBTAINED IN SABOURAUD'S MEDIUM. IT HAS BEEN ESTABLISHED
THAT SOME TIMES CLINICALLY HEALTHY CATS MAY BE CARRIERS OF M. LANOSUM.

UNCLASSIFIED

USSR   UDC 669.295

BOGACHEV, I. N., DAVYDOV, V. N. and KOROBEYNIKOV, V. P.

"Removal of Scale From the Surface of Titanium Alloys Using Cavitation
Treatment"

Moscow, Tsvetnyye metally, No 1, Jan 72, pp 77-78

Abstract: Described is a feasibility study on the use of ultrasonic cavita-
tion treatment of the surface of titanium alloy sheets for either partial
or complete removal of scale exclusive of the shortcomings of other methods.
It is shown that preliminary loosening-up of the difficult-to-remove scale
from titanium alloys by ultrasonic cavitation treatment in water reduces the
subsequent pickling time 30 to 40 times, which significantly reduces the
degree of hydrogenation of alloys in the process of pickling and thus improves
the surface quality of the sheet material, without affecting its basic
mechanical properties. The experimental materials were VT6s and VT14 hot-
rolled titanium stock. A diagram of the experimental ultrasonic unit for the
cavitation treatment of the surface of sheet metal specimens is shown. The
subsequent chemical pickling was performed in an aqueous solution of 15%
H_2SO_4 and 2% NH_4F at 20°C. The specimens were rinsed in running water for
15-20 sec. (1 illustration; 3 bibliographic references).
  1/1

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USSR

ZHUKOV, O. V., DAVYDOV, V. P.

"System for Generation of Programs for Conversion of Information Files"

Mat. Obespecheniye ASU [Automatic Control System Software -- Collection of Works], Moscow, 1972, pp 154-159 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V652, by L. Khizder).

Translation: The following are suggested as primary functions to be performed by file conversion programs: 1) rearrangement and formation of groups of output files from groups of input files; 2) coding and decoding using a dictionary; 3) selection of quantities and records on the basis of fixed conditions; 4) conversion of a file from one form of representation to another. The role of file conversion procedures in formation and servicing of the information base of a data processing system is particularly noted. Brief information is presented on a system for generation of programs for conversion of information files developed and used at the main computer center of the State Supply Commission, USSR.

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USSR

UDC: 62-50

DAVYDOV, V. P.

"Equations of Instrumental Errors in One Type of Inertial Navigation System"

Kiev, Kibernetika i vychislitel'naya tekhnika, No 19, 1973, pp 127-131

Abstract: An inertial navigation system is considered in which accelerometers and angular velocity tachometers fixed to the object are used as primary information sensors. Equations are derived for the system errors caused, in turn, by errors of the primary information sensors, and methods are proposed for simplifying those equations. A final form of the equations is derived under the assumptions that the object moves so close to a planet that the gravitational effects of other heavenly bodies are negligible, that the planet's gravitational field differs only negligibly from the central force field, that the instrument error of the navigation system is small compared to the distance between the center of mass of the object and the planet's center of mass, and that the trajectory of the object's motion is specified.

1/1

USSR D UDC 681.325.3

SHKULIN, P. S., DAVYDOV, V. P. KASIN, A. P.

"A Microprogram Control Device"

Moscow, Otkrytiya, Izobreteniya, Promushlennyye Obraztsy, Tovarnyye Znaki, No 9, 1970, p 130, Patent No 264783, filed 25 Mar 68

Abstract: This Author's Certificate introduces a microprogram control device which contains a permanent memory, decoder, relay registers, and a circuit for controlling the transfer of a microcommand address. As a distinguishing feature of the patent, the device is simplified by connecting the first outputs of the first operation code register throught the first group of rectifiers to the first input of the delay register, the second outputs of the first code operation register are connected through the second group of rectifiers to the second input of the delay register, the first outputs of the second operation code register are connected through the third group of rectifiers to the third input of the delay register, the second outputs of the second code operation register are connected through the fourth group of rectifiers to the fourth input of the delay register, the second inputs of the first and
1/2

USSR

SHKULIN. P. S., et al., Moscow, Otkrytiya, Izobreteniya, Promysh-
lennyye Obraztsy, Tovarnyye Znaki, No 9, 1970, p 130, Patent No
264783, filed 25 Mar 68

second groups of rectifiers are connected through the first "AND"
circuit to the first output of the flip-flop, the second output of
the flip-flop is connected through the second "AND" circuit to the
second inputs of the third and fourth groups of rectifiers, the
second inputs of the "AND" circuits are connected to the signal
transfer bus, and the first and second inputs of the flip-flop are
connected to the corresponding outputs of the memory device.

2/2

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USSR   UDC 621.762.001:669.296'784+295'784

DAVYDOV, V. S., YERMAKOV, B. G., and SOKOLOV, V. V.

"Technique of Producing, and Certain Properties of Pyrolytic Carbides of Zirconium and Titanium"

V sb. Tugoplavk. karbidy (The Refractory Carbides -- Collection of Works), Kiev, "Nauk. Dumka," 1970, pp 20-23 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G374 by authors)

Translation: An investigation is made of the conditions under which dense deposits, homogeneous in composition, of titanium and zirconium carbides are produced by the method of precipitation from a gaseous mixture. Optimum conditions are worked out for the processes of carbide precipitation from the gaseous phase containing vapor of a higher metal chloride, methane, and H_2. The authors consider the effect of various process parameters (temperature, composition of gaseous phase, consumption of vapor-and-gas mixture) on precipitation rate, structure, and chemical composition of the resultant carbides. Three illustrations. Two tables. Bibliography with five titles.

1/1

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USSR   UDC: 51:621.391

DAVYDOV, V. S.

"Decoding of Cyclic Codes Using a Majority Method"

V sb. Teoriya i praktika ispol'z. sredstv tekhn. kibernetiki. Kn. 1
(Theory and Practice in Using Facilities of Technical Cybernetics--col-
lection of works, Book 1), Novosibirsk, 1970 (1971), pp 204-211 (from
RZh-Kibernetika, No 7, Jul 71, Abstract No 7V536)

Translation: The paper deals with questions of circuit realization of
of cyclic codes which have quasi-divided or quasi-λ-connected checks.
G. Tenengol'ts.

1/1

USSR

UDC 621.314.61

DAVYDCV, V.S., GURKALCV, K.I.

"Concerning Use Cf The Duality Principle For A Circuit With Rectifiers"

V sb. Vopr. elektrosvyazi (Problems Cf Electrical Communications--Collection Of Works), Kiev, "Tekhnika," 1970, pp 15-20 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B501)

Translation: A method is presented of computation of a 2-phase bridge rectifier operating with a load of inductive character and using the principle of duality of the electrical circuits. Formulae are derived for determining the transformation ratio of the resistances from the a-c circuit and the d-c circuit. 4 ill. 4 ref. Summary.

1/1

MEDICINE

Aerospace Medicine

USSR   UDC 613.693/612.681

DAVYDOV, V. V., Maj Med Serv

"Psychophysiological Characteristics of a Pilot's Perception of Instrument Information After His Attention is Drawn to Objects Outside the Cockpit"

Abstract: Accommodation time was studied in flight and laboratory (trainer) experiments on 15 pilots 25 to 35 years of age in order to assess the effects of shifting attention from the instrument panel to external objects and back. The results of both the flight and the trainer experiments (during which the subject had to look at a screen showing pictures taken from a plane and then find small objects nearby) failed to reveal any significant difference between the duration of the first and subsequent glances at the instruments after the pilots looked outside the cockpit. It would appear that in shifting attention from external objects to the instrument panel, the accommodation process has little effect on the duration of perception of instrument information. The difficulties occasionally experienced by pilots when shifting from visual to instrument flight and back are due to other factors (not discussed here).

1/1

TITLE--PRIME12 C(PRIME3 HE, PRIME3 HE PRIME) PRIME12 C AND PRIME12 C(PRIME
   3 HE,T) PRIME12 N MIRROR REACTIONS -U-

AUTHOR-(05)-ARTEMOV, K.P., GLUKHOV, YU.A., GOLDBERG, V.Z., DAVYDOV, V.V.,
   PETROV, I.P.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(1), 43-7

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ION BOMBARDMENT, CARBON ISOTOPE, NUCLEAR REACTION, EXCITED
   NUCLEUS, DIFFERENTIAL CROSS SECTION, HELIUM ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0171   STEP NO--UR/0367/70/011/001/0043/0047

CIRC ACCESSION NO--AP0048463
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0048463

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIFFERENTIAL CROSS SECTIONS ARE MEASURED FOR THE TITLE MIRROR REACTIONS AT AN PRIME3 HE ION ENERGY OF 36 MEV. DIRECT EVIDENCE IS PRESENTED THAT THE STATES OF THE PRIME12 C NUCLEUS WITH ENERGIES 15.1 MEV (1 PLUS, T) EQUALS 1) AND 16.1 MEV (2 PLUS, T EQUALS 1) ARE ANALOGOUS TO THE GROUND STATE (1 PLUS) AND THE 1ST EXCITED STATE (0.95 MEV) OF PRIME12 N. THUS, THE 0.95-MEV LEVEL OF PRIME12 N HAS THE QUANTUM NOS. 2 PLUS. THE ADMIXT. OF THE T EQUALS 0 STATE TO THE 15.1-MEV STATE OF PRIME12 C IS NO MORE THAN 3PERCENT IN THE AMPLITUDE. THE SAME ADMIXT. TO THE 16.1-MEV STATE OF PRIME12 C IS ALSO, VERY LIKELY NO MORE THAN A FEW PER CENT   FACILITY: INST. AT. ENERGY, IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC 911.3:613.6(575.1)

DIMANT, I. N., TASHBEKOV, B. U., DAVYDOV, Ya. S., and BOLOTOVA, M. N.

"Comparative Evaluation of the 3.4-Benzpyrene Content in the Air of Some
Uzbekistan Cities"

V sb. Epidemiol. zlokachestven. opukholey (Tumor Epidemiology -- collection
of works) Alma-Ata, "Nauka," 1970, pp 451-454 (from RZh-Meditsinskaya
Geografiya, No 4, Abstract No 4.36.146)

Translation: The highest air contamination indicators were found in Angren
and Almalyk. The chief cause of 3.4-benzpyrene in the air of Almalyk,
Chirchik, Akhangaran and Bekabad is automobile exhaust gases. Heavy smoke
contamination was noted in Angren. Great sources of contamination in Angren
are the State regional electric power station and the Construction Material
Combine (0.54-0.77 Mg/100 m^3 in the summer and 0.92-1.15 M/100 m^3 in the
winter). In the area of the Tashkent highway, the level is 0.85 Mg/100 m^3.
The Almalyk winter carcinogen concentration in the industrial zone is 0.35
Mg/100 m^3; in the residential zone, it is 0.19 M/100 m^3 in summer and 0.25
Mg/100 m^3 in the winter. Corresponding figures for the city highways are
0.94 and 0.98 Mg/100 m^3. The lowest 3.4-benzopyrene concentrations are
in the green belt around Bekabad (0.032 Mg/100 m^3 in the summer and 0.077
Mg/100 m^3 in the winter).
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USSR   UDC 539.374

DAVYDOV, Ye. Yu.

"Experimental Study of a Band Shell in the Elastic-Plastic Stage"

Translation: The results of an experimental study of a band shell in the
elastic-plastic stage on a model are presented. The band shell is formed
by the interweaving of two mutually perpendicular bands resting on an annular
contour. The diameter of the model was 6.2 m. The shell is made from a plane
and to form a concave surface with the required depth of dip, it is uniformly
loaded by using the plastic stage of the working of the material, which is
of an aluminum-magnesium alloy. By loading the shell in stages the designed
depth of dip is achieved, equal to 1/20-1/25 of the diameter. In order to
obtain theoretical data, the shell-membrane is approximated by a discrete
orthogonal grid with shell dimensions 60 × 60 cm considering the following
simplifications: (a) a calculation in the horizontal plane of the system is
carried out using an undeformed scheme (the angles of intersection of the

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DAVYDOV, Ye. Yu., <u>Tr. TsNII stroit. konstruktsii</u>, 1971, No. 19, pp 20-26

bands are assumed to be unchanged); (b) vertical displacements of the con-
tour are absent; (c) the rigidity of the support contour to twisting is not
taken into account in the calculation. The following was established from
the experimental study: (1) normal stresses in the bands (without consider-
ing bending and vertical displacements of the shell in the working of the
material in the elastic stage) are close to the theoretical stresses ob-
tained in calculating the shell as a discrete orthogonal system and the
bands work on the deflection in their own plane and the resulting stresses
have a considerable effect on the stress state of the shell; (2) one can
neglect the magnitude of the bending stresses in the working of the material
in the plastic stage since they are small; in the support contour the bending
moments in the plastic stage are reduced; (3) plasticity begins from the
middle bands and propagates with an increase in the load to the outer bands;
(4) stresses along the width of the band are equalized with the appearance
of plasticity. Z. L. Gil'gur.

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DAVYDOV, YU. A.

"Mixing Conditions for Markov Chains"

Teoriya Veroyatnostey i yeye Primeneniya [The Theory of Probabilities
and Its Applications], 1973, Vol 18, No 2, pp 321-338 (Translated from
Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V60)

Translation: Part 1 of this work formulates various conditions for
mixing in terms of the transient function of the Markov chain studied.
Part 2 presents simple sufficient conditions for a homogeneous Markov
recovery chain to have the property of strong mixing. Part 3, based
on the conditions found, presents examples of stable processes with
strong mixing which do not follow the central limit theorem. The last,
fourth part estimates the dispersion of sums DS_n and the strong mixing
factor for the examples constructed.

From the introduction

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USSR   UDC 621.395

DAVYDOV YU. G.

"Once More Concerning The Evaluation Of Quantization Noise"

Elektrosvyaz', No 6, June 1972, pp 21-23

Abstract: A new criterion is proposed for an evaluation of the effect of quantization noise in systems with pulse-code modulation, in which a coding device is used with a nonuniform scale of quantization. A comparison is made of the results of an evaluation of quantization noise with respect to the generally used and the proposed criteria. The analysis conducted showed that in the range of values of the signal levels which occur under actual conditions, the variation in the evaluation of the signal-to-noise ratio is sufficiently pronounced as to require a review of the quantitative advantage derived from pulse-code modulation systems with a compressor during transmission by them of signals of a distinct form. 1 ill. 3 ref. Received by editors, 27 October 1971.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISM OF SECONDARY
RECRYSTN. WAS STUDIED WITH COLD ROLLED W BY HEATING FOR 1 HR AT
100DEGREE INTERVALS BETWEEN 1600 AND 2200DEGREES. AT 1600-1700DEGREES,
A STRUCTURE OF NEARLY EQUAL GRAINS, AV. DIAM. 20 MU, FORMED. CRYSTALS
BEGAN TO GROW BY THE COALESCENCE OF SMALL GRAINS AT GREATER THAN
1800DEGREES. THE SHAPE OF ETCH PITS ON EACH SIDE OF THE VANISHING GRAIN
BOUNDARY WAS DIFFERENT. THE NO. OF DISLOCATIONS, LAMBDA, IN A UNIT
BOUNDARY LENGTH WAS CALCD. BY LAMBDA B EQUALS SIN THETA, WHERE B IS THE
BURGER'S VECTOR AND THETA IS THE REORIENTATION ANGLE BETWEEN GRAINS.
THE PROBABILITY OF THE BOUNDARY MIGRATION MECHANISM INCREASED WITH
THETA, WHEREAS THE PROBABILITY OF THE SCATTERING MECHANISM DECREASED.
COLLECTIVE AND SECONDARY RECRYSTN. OCCUR SIMULTANEOUSLY.   IN 1 HR AT
2200DEGREES THE GRAIN DIAM. DUE TO COLLECTIVE RECRYSTN. INCREASED 2
TIMES, WHEREAS THAT DUE TO SECONDARY RECRYSTN. INCREASED 30 TIMES.

BELOTSERKOVSIY, O. M. and DAVYDOV, Yu. M.

"Computing Transsonic 'Supercritical' Flow Modes by the 'Coarse Particles' Method"

Abstract: A description of the method of "coarse particles" is given in an earlier article by the authors of the present paper (Nestatsionarnyy metod "krupnykh chastits" dlya resheniya zadach vneshney aerodinamiki -- The Nonstationary "Coarse Particles" Method for Solving Problems in External Aerodynamics -- Moscow, Reprint, VTs AN SSSR, 1970) as applied to eddy problems in gas dynamics. The same method can be used to obtain a picture of the flow of fluids around bodies of various forms in a wide range of changes of initial conditions, from purely subsonic to supersonic situations, including transitions through the speed of sound, and in sonic and "supercritical" flow. The description of a computational algorithm derived from the "coarse particles" method is given, and it is shown how complex problems in aerodynamics can be solved by applications of the method. A bibliography of 23 titles is appended.
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USSR

UDC: 533.6.011

BELOTSERKOVSKIY, O. M., DAVYDOV, YU. M.

"Investigation of Schemes of the Method of 'Large Particles' by Means of Differential Equations"

Moscow, Probl. Prikl. Mat. i Mekh -- Sbornik (Problems of Applied Mathematics and Mechanics -- Collection of Works), Nauka, 1971, pp 145-155 (from Refera-tivnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2B266, Authors' Abstract)

Translation: A number of schemes of the method of "large particles" is investigated by means of differential approximations. First, a brief description is given of the method of "large particles," the various difference schemes of which are subsequently analyzed. By means of the consideration of a zeroth-order approximation, it is established that the difference-equation system of the method of "large particles" is of the first order of accuracy both within the analyzed region and on its boundary. An analysis of the first and second differential approximations explains the viscosity effects of the difference scheme. Investigation of the first and second differential approximations makes it possible to analyze the stability of the solution. It is shown that one difference scheme of the method of "large particles" (use of formulas of the first order of exactness for the mass flux delta M^{f1}) yields a stable solution, while another (use of formulas of the second order of exactness for delta M^{f1}) is stable only when an explicit term of synthetic viscosity is introduced. 8 references.
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USSR

DAVYDOV, Yu. P., YEFREMENKOV, V. M., and SKRIPTSOVA, A. V.

"Polymerization of U(VI) Hydroxocomplexes in Solutions"

Abstract: The polymerization of U(VI) hydroxocomplexes was studied by the dialysis method proposed in earlier work by Davydov (DAN BSSR, Vol 15, No 1, 43, 1971). Solutions of $^{238}UO_2(NO_3)_2$ and $^{233}UO_2(NO_3)_2$ in HNO_3 at various values of pH were subjected to dialysis, using a cellophane membrane. The concentration of U in the solutions was determined on the basis of the alpha-radiation emitted by ^{233}U. At pH 4.0 and 5.0 no U was retained by the membrane in the concentration range of $UO_2(NO_3)_2$ that was subjected to study ($10^{-6}-10^{-4}M$) -- hence, only monomeric forms of uranyl were present. At pH 6.0 the degree of polymerization (the average number of U atoms per molecule) was constant in the entire concentration range and equal to 1.7. At pH 6.5 the degree of polymerization of U hydroxocomplexes was considerably higher at low concentrations of U ($1X10^{-5}M$) than that at pH 6.0. With increasing concentrations of U, the degree of polymerization decreased. At pH 7.0 and concentrations $\geq 1X10^{-5}M$, a precipitate of uranium hydroxide formed. Dialysis of the supernatant solution showed that polymeric forms were present in it to a considerable extent in
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